"BILATERAL SUPERFICIAL AND DEEP CERVICAL PLEXUS BLOCK USING ROPIVACAINE & CLONIDINE FOR THYROID SURGERIES UNDER GENERAL ANAESTHESIA".

(A PROSPECTIVE, RANDOMIZED, DOUBLE BLINDED , PLACEBO CONTROLLED STUDY FOR EVALUATING THE ANALGESIC EFFICACY OF (0.2%)ROPIVACAINE VS(0.2%) ROPIVACAINE & CLONIDINE)

Dissertation submitted to

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

In partial fulfilment for the award of the degree of

DOCTOR OF MEDICINE IN ANAESTHESIOLOGY

BRANCH X

INSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE
MADRAS MEDICAL COLLEGE
CHENNAI- 600003

APRIL 2017

CERTIFICATE OF THE GUIDE

This is to certify that the dissertation titled , "Bilateral superficial and deep cervical plexus block using Ropivacaine & Clonidine for Thyroid surgeries under general Anaesthesia '' [A Prospective, randomized, double blinded , placebo controlled study for evaluating the analgesic efficacy of (0.2%)Ropivacaine Vs(0.2%) Ropivacaine & Clonidine] is a bonafide research work done by Dr. RAMANIKANTH.S in partial fulfilment of the requirement for the degree of DOCTOR OF MEDICINE in Anaesthesiology.

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Place :

CERTIFICATE

This is to certify that the dissertation titled, "Bilateral superficial and deep cervical plexus block using Ropivacaine & Clonidine for Thyroid surgeries under general Anaesthesia "[A Prospective, randomized, double blinded , placebo controlled study for evaluating the analgesic efficacy of (0.2%)Ropivacaine Vs(0.2%) Ropivacaine & Clonidine], submitted by Dr.RAMANIKANTH.S in partial fulfillment for the award of the degree of DOCTOR OF MEDICINE in Anaesthesiology by The Tamilnadu Dr.M.G.R Medical University, Chennai is a bonafide record of work done by him in the INSTITUTE OF ANAESTHESIOLOGY & CRITICAL CARE, ," Madras Medical College, during the academic year 2014 -2017 .

PROF DR. B.KALA M.D., D.A.,
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DECLARATION

I hereby declare that the dissertation titled, "Bilateral superficial and deep cervical plexus block using Ropivacaine & Clonidine for Thyroid surgeries under general Anaesthesia" [A Prospective, randomized, double blinded , placebo controlled study for evaluating the analgesic efficacy of (0.2%) Ropivacaine Vs(0.2%) Ropivacaine & Clonidine], has been prepared by me under the guidance of **Prof.Dr.V.PANKAJAVALLI,** Professor of Anaesthesiology, Institute of Anaesthesiology & Critical care, Madras Medical college, Chennai, in partial fulfillment of the regulations for the award of the degree of M.D (Anaesthesiology),examination to be held in April 2017.

This study was conducted at Institute of Anaesthesiology & Critical care, Madras Medical College, Chennai.

I have not submitted this dissertation previously to any journal or any university for the award of any degree or diploma.

Dr. Ramanikanth.S

Date:
Place: Chennai

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INDEX

INTRODUCTION

General anaesthesia is the preferred anaesthetic technique for thyroid surgeries. Tracheal stimulation due to endotracheal tube movement and surgery in the neck requires deep plane of general anaesthesia, which may result in delayed recovery. Short acting opioids can be used to avoid this but may result in post operative hyperalgesia.

Post operative pain is of moderate intensity after thyroid surgery. Opioids or NSAIDs may be required during the first post operative day. Opioids produce analgesia effectively but with side effects like nausea, vomiting ,hypoventilation,urinary retention, somnolence. By reducing the dose of opioids ,we can reduce the side effects, but the analgesia will also be less .So other methods like non-opioid analgesia, regional blocks,and local anaesthetic infiltration at the surgical site has been tried.

This study was conducted to compare post operative analgesia using ropivacaine(0.2%)and ropivacaine (0.2%) with clonidine (2mcg/kg) in bilateral superficial and deep cervical plexus block after general anaesthesia for thyroid surgeries .

SECONDARY OBJECTIVES

1) To evaluate the duration of post operative analgesic efficacy of these drugs.

2) To assess Intraoperative and post operative haemodynamics

3) Post operative visual analogue scale pain score.

4) Complication rate.

5) To evaluate intra operative opioids dosage.

AIM

To compare post operative analgesia using ropivacaine(0.2%)and ropivacaine (0.2%) with clonidine (2mcg/kg) in bilateral superficial and deep cervical plexus block after general anaesthesia for thyroid surgeries .

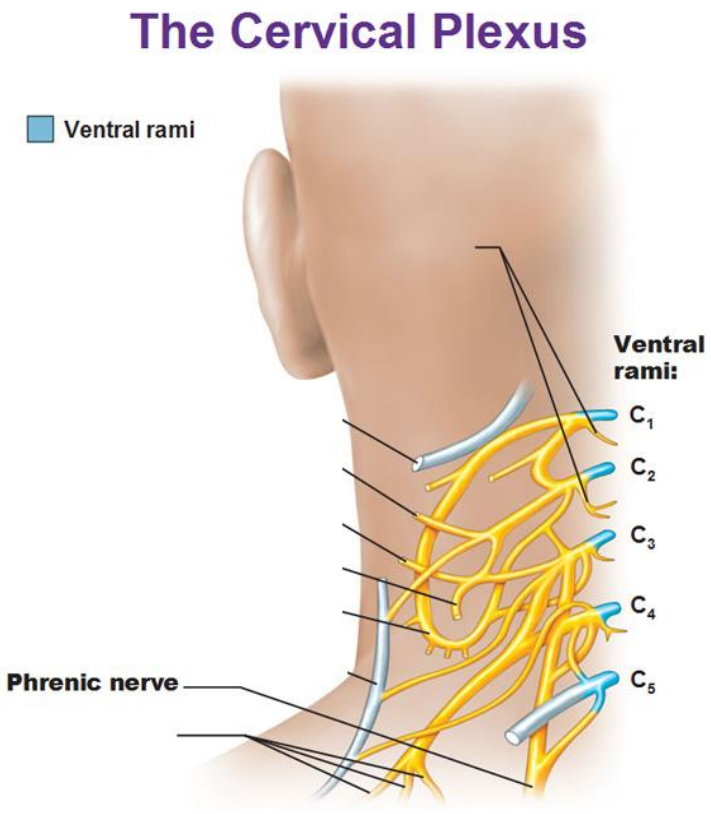
CERVICAL PLEXUS

FORMATION

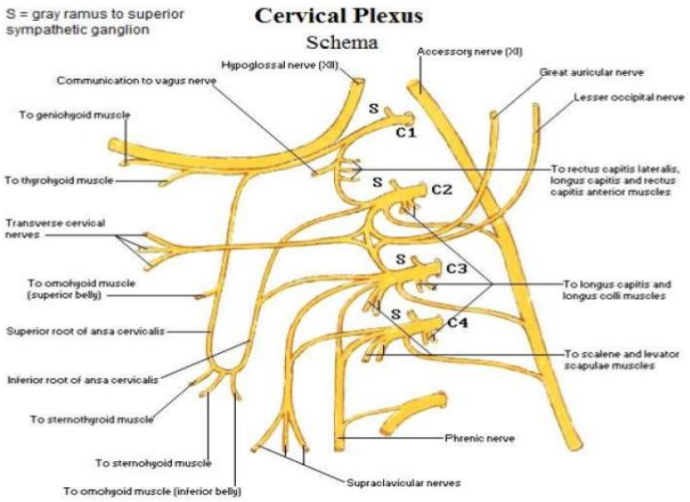
The ventral rami of the upper four cervical nerves forms the cervical plexus . The ventral rami emerge between the anterior and posterior tubercle the cervical transverse process. All rami divide into two except first cervical nerve.

POSITION

The plexus is anteriorly related to internal jugular vein, prevertabral fascia and sternocleido mastoid muscles. Posteriorly related to muscles which arises from the posterior tubercle of the transverse process. i.e scalenus medius and levator scapulae .



Branches



SUPERFICIAL BRANCHES

It emerges at the superficial fascia of the neck at mid portion of the posterior border of the sternomastoid muscles. Its branches are

1) Lesser occipital nerve which ascends up and supplies the skin of the upper portion of neck region and behind auricle.

2) Great auricular nerve which ascends across sternocleidomastoid muscle and supplies the skin over the parotid region .

3) Transverse cervical nerve crosses sterno mastoid muscles horizontally and supplies the skin over the anterior triangle.

4) Supra clavicular nerve (C3. C4) descends behind the sterno mastoid muscle and supply the shoulder and upper pectoral region skin.

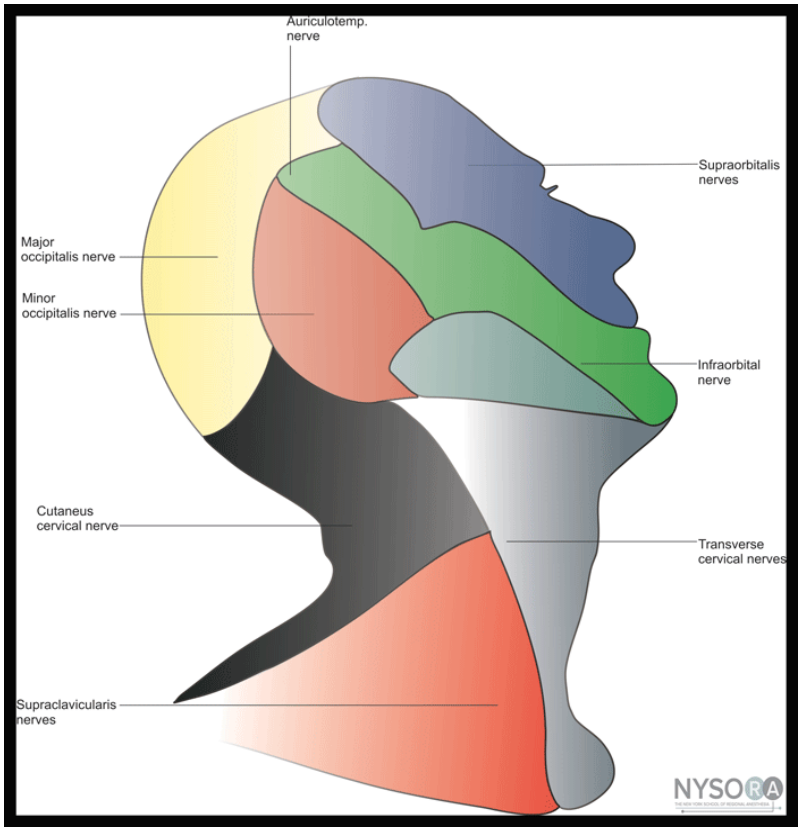
DEEP BRANCHES

1) Muscular branches supplies muscles of the neck and phrenic nerve which supplies diaphragm.

2) Communicating branch.

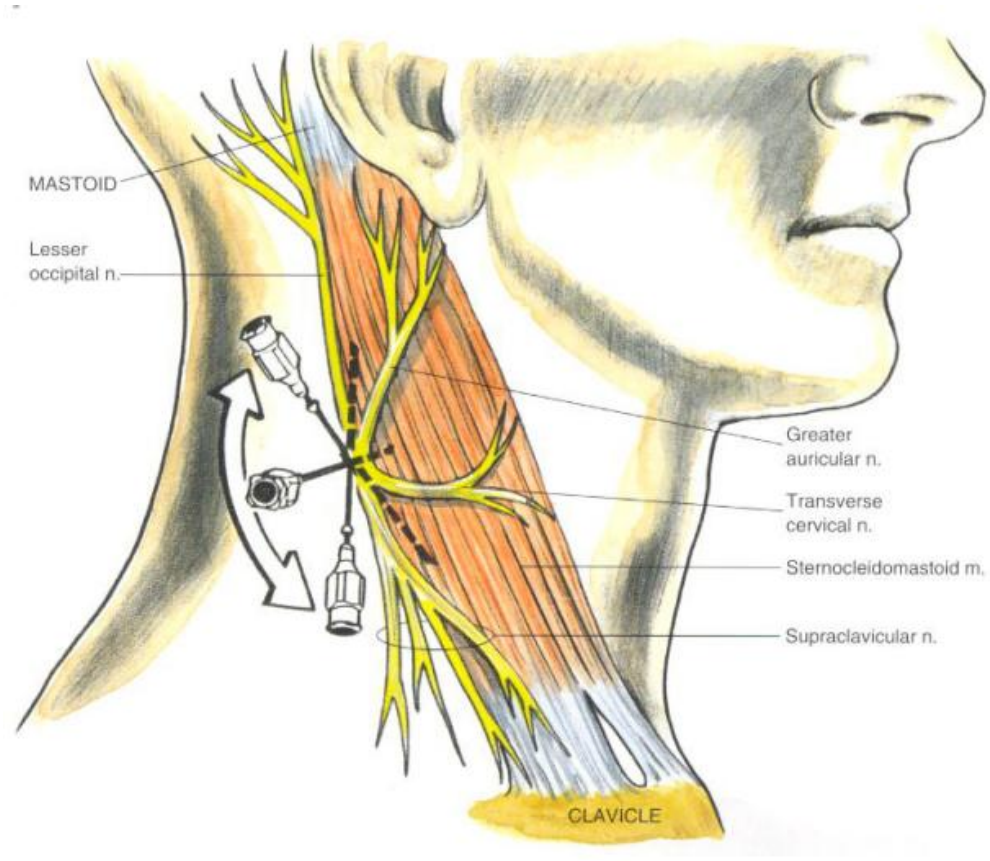
SUPERFICIAL CERVICAL PLEXUS

The superficial cervical plexus arises from the anterior rami of the C2 through C4 and emerge at the mid portion of the posterior border of the sternomastoid muscles as four distinct nerves which supplies skin over the anterolateral aspect of the neck region.



The lesser occipital nerve comes from stem of C2 where as greater auricular and transverse cervical are derived from part of C3.

The remaining part of C3 joins with major part of C4 which give rise to supraclavicular trunk , which further divide in to upper, middle and lower supra clavicular nerve .



Ascending branches are

1) Occipital nerve

2) Superficialis coli

3) Auricular magnus

4) Suprasternal nerve

Descending branches are

1) Supraclavicular nerve

2) Supra acromial

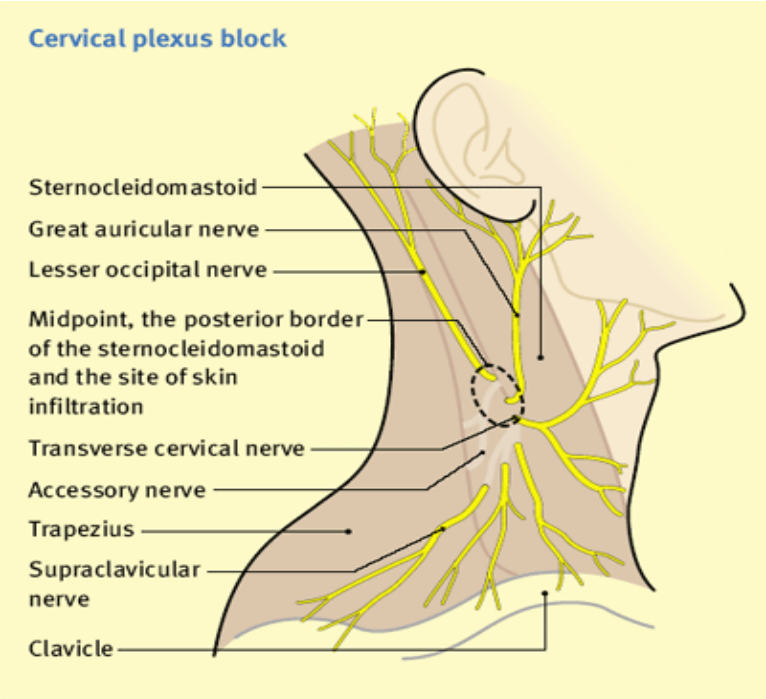
SUPERFICIAL CERVICAL PLEXUS BLOCK

INDICATION

- Carotid endarterectomy
- Superficial neck surgery
- Central venous catheterization

TECHNIQUE

- Landmark technique
  - Two point technique
  - Three point technique
- Ultra sound guided technique



LANDMARK TECHNIQUE

The patient is in supine position with neck turned slightly to opposite side, and landmark is identified as mid portion of the posterior border of the sternomastoid muscle.

It consist of subcutaneous injection of local anaesthetic along the posterior border of the sterno mastoid muscle just under the skin .

TWO POINT TECHNIQUE

A line drawn between the mastoid process and chassaignac's tubercle of C6 transverse process. At the mid point of this line, 25 G block needle is inserted , skin wheal is raised and the needle is directed cephalad towards the mastoid process along the posterior border of sterno mastoid muscle. 3 to 4 ml of local anaesthetic is injected in a subcutaneous plane as the needle is withdrawn. Care must be taken to avoid piercing the external jugular vein. Then the needle is directed towards the clavicle and same amount of local anesthetic is injected in a subcutaneous plane while withdrawing the needle.

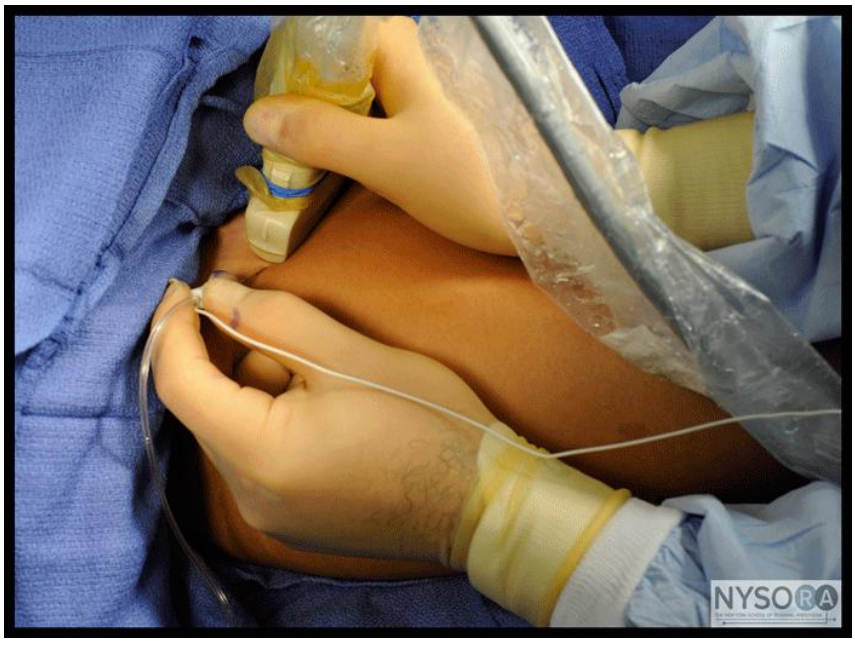
THREE POINT TECHNIQUE

In this technique, the land mark used is posterior border of the sternocleido mastoid muscle 2 cm above the clavicle. 10 ml local anaesthetic preparation is used, and depth of injection is less than 5 mm. Now 2 ml of local anaesthetic is injected at the site of needle

entry, 6ml in the cephalad direction and another 2 ml in the transverse direction.

ULTRASOUND GUIDED TECHNIQUE

The aim of ultrasound guided superficial cervical plexus block is to increase the success of the block by depositing the local anaesthetic as close to the sensory branches of cervical plexus. By using ultrasound, one can ensure the spread of local anaesthetic in the correct inter muscular plane , which increases the success of the technique and avoids too deep needle insertion and thereby preventing injury to neighboring structures and vascular deposition. Both in – plane and out-of plane technique can be used successfully.



Patient is positioned in supine with head turned to opposite side of the procedure. The skin is disinfected. The mid portion of the posterior border of the sternocleido mastoid muscle was scanned using

high frequency linear probe. The inter muscular plane is identified between the sternomastoid and scalene muscle. 1- 2 ml of local anaesthetic is injected to confirm the proper position and after negative aspiration, 10 ml of local anaesthetic mixture is deposited in the desired inter muscular plane .

ADVANTAGE

1) Increases the success of block

2) Avoid deeper insertion and inadvertent injection in to the important surrounding structure.

THE DEEP CERVICAL PLEXUS

This supplies the anterior vertebral muscles – the recti capitis, longus capitis and longus cervicis, as well as giving contributions to scalenus medius (the main scalene innervation is from the roots of the brachial plexus). In addition, branches pass to levator scapulae (C3, C4) and to two muscles whose principal innervation is from the spinal accessory nerve: sternocleidomastoid (C2, C3) and trapezius (C3, C4)

DEEP CERVICAL PLEXUS BLOCK

INDICATION

- Carotid endarterectomy
- Superficial neck surgery

TECHNIQUE

- Landmark technique
  - Three point technique
  - Single point technique
- Ultra sound guided technique

LANDMARKS

1) Mastoid process
2) Chassaignac's tubercle
3) Posterior border of sternocleidomastoid muscle.

The mastoid process and chassaignac's tubercle are identified and marked. A line is drawn connecting them. label the insertion sites of C2,C3,C4 along the line which are 2cm,4cm,6cm from the mastoid process respectively.

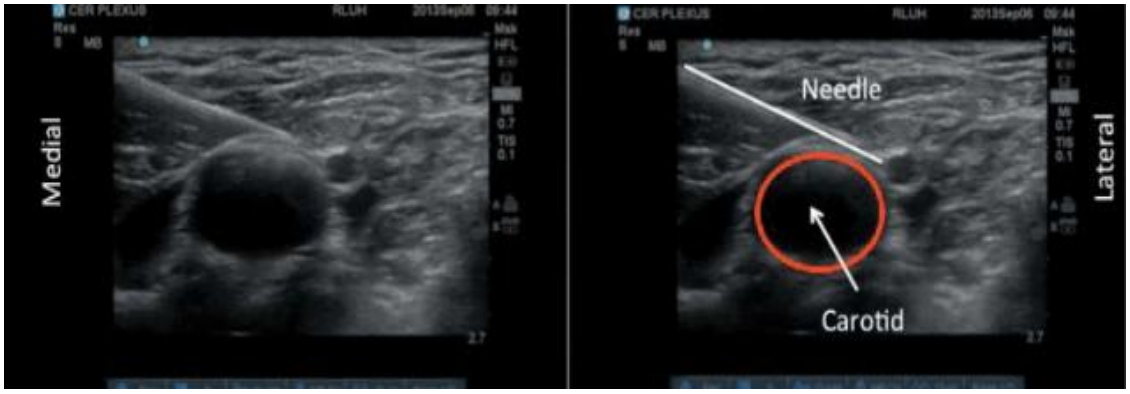
TECHNIQUE

After cleaning the skin and local anaesthetic infiltration along the line, the block needle connected with the syringe with local anaesthetic by flexible tubing is inserted perpendicular to the skin plane between the palpating fingers with slight caudal orientation. The needle should never be oriented cephalad. The needle advanced slowly until the transverse process is hit and at this position needle slightly withdrawn 1 to 2 mm stabilized and after negative aspiration local anaesthetic is injected. Needle withdrawn .Procedure repeated for the next levels. never advance the needle beyond 2.5 cm to avoid cervical cord injuries, vertebral artery or carotid puncture. A single injection at the C3 level can also be performed ,which is safe and effective.

ULTRA SOUND GUIDED TECHNIQUE

APPROACH-1

LA is deposited just behind the carotid sheath at the level of the carotid bifurcation . The injection is not as deep as described for classical deep cervical plexus block. The advantage of this approach is the simplicity and safety. It is important to visualize the needle tip through out the procedure and aspirate before each injection so that intra-vascular injection into the carotid or the internal jugular can be avoided.



APPROACH-2

The second approach uses the findings of Winnie and colleagues. They suggested following the interscalene groove cranially and depositing the Local anesthetic in this groove . This is used to its advantage for the shoulder surgeries.

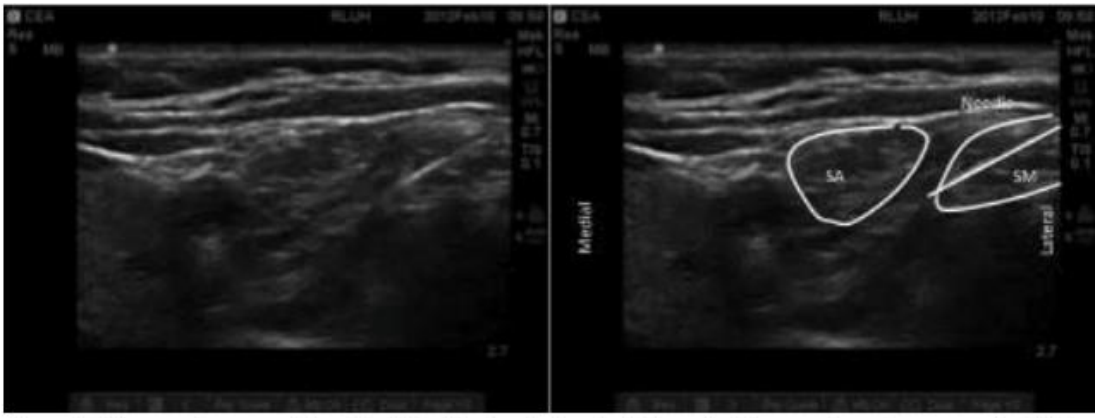
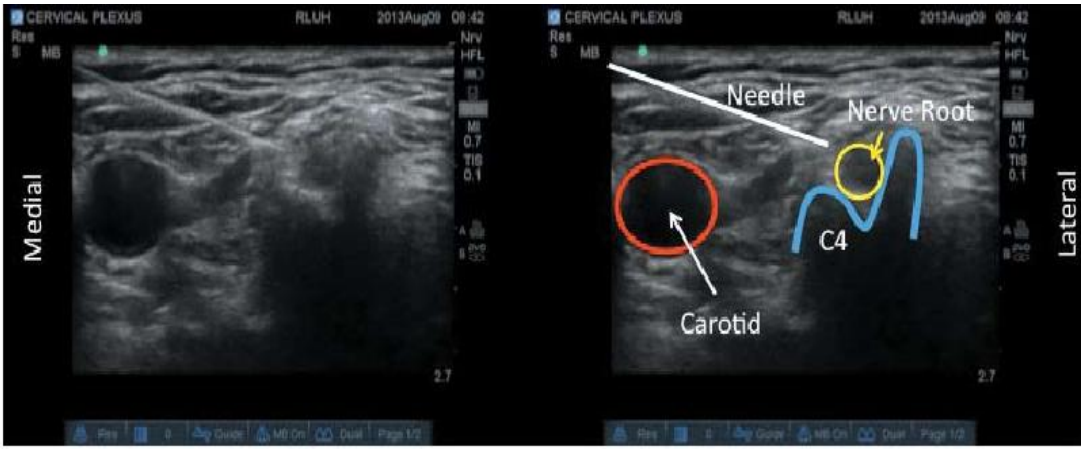


Figure 11: Ultrasound approach based on Winnie's description, LA is deposited between the scalenus anterior (SA) an medius (SM) at C4 level.

APPROACH-3

The last approach follows the classical description of deep cervical plexus block. In this technique the C4 level is marked and the transducer is placed laterally at this point and moved posteriorly till the transverse process of C4 is identified. Once the tip of the needle is in close proximity of the post tubercle or the nerve root, after aspiration, 10-15 ml of LA is injected .

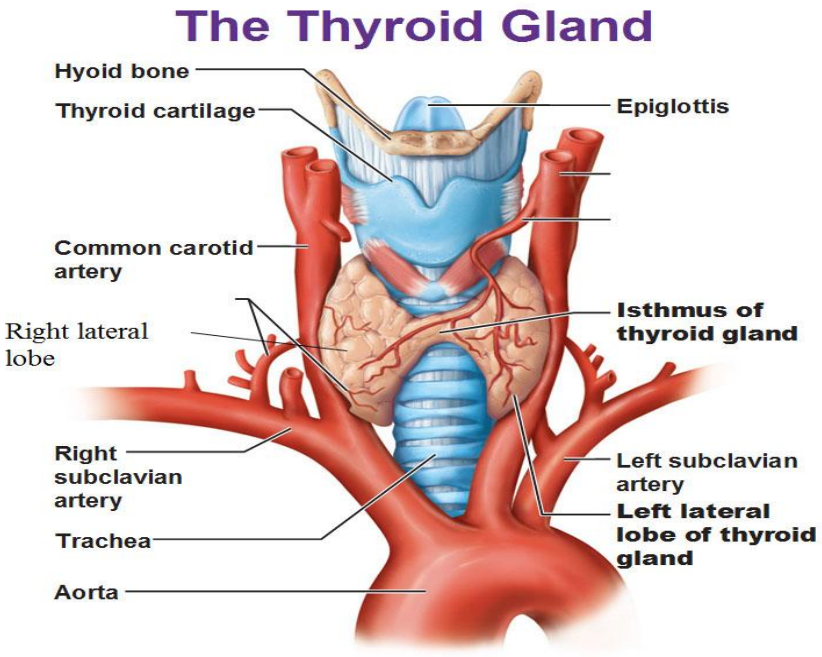


This method is used in our study.

THYROID GLAND

ANATOMY

Thyroid gland is an endocrine organ , situated in the lower part of the neck opposite to vertebrae C5 , C6 , C 7 and T1 . It is butterfly in shape . It consist of right and left lobe and joined together by isthmus. A third pyramidal lobe projects upwards from the isthmus. The upper pole of the thyroid gland is pointed, and the lower pole is rounded and broad .



Gross anatomy of the thyroid gland, anterior view

It extends from the middle of the thyroid cartilage to 4th or 5th tracheal rings . The isthmus extend from the 2nd to 3rd tracheal ring.

Accessory thyroid gland may sometime be present as small detached masses in the vicinity of lobes or above the isthmus.

It mainly regulates the basal metabolic rate, stimulates somatic and psychic growth. It also plays an important role in calcium metabolism

CAPSULES OF THYROID GLAND

1) True capsule : It is the peripheral condensation of the connective tissue of the thyroid gland

2) False capsule : It is derived from pre tracheal layer of the deep cervical fascia

Since there is a presence of dense capillary plexus deep to the true capsule, to avoid bleeding during thyroidectomy, thyroid gland is removed along with the true capsule .

DIMENSIONS AND WEIGHT

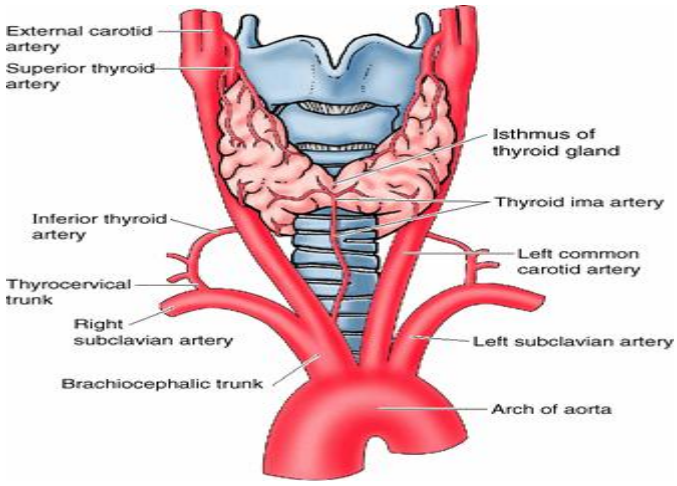
Each lobe measures about 5cm*2.5cm*2.5cm, and isthmus measures about 1.2cm*1.2cm. The average weight of the gland is 25g. The gland is slightly larger in female than male. During menstruation and pregnancy, the gland increases in size.

ARTERIAL SUPPLY

1) ***Superior thyroid artery :*** Is a branch of external carotid artery and divided in to anterior and posterior branches. It supplies anterior and posterior lobes of thyroid respectively.

2) ***Inferior thyroid artery :*** A branch from the thyrocervical trunk which itself is a branch of subclavian artery.

3) ***Thyroidea ima artery :*** A branch from brachio cephalic trunk or directly from the aorta Accessory thyroid arteries which also supplies thyroid gland and arises from the tracheal and esophageal arteries.



VENOUS DRAINAGE

1) Superior thyroid vein drains in to internal jugular or in the common facial vein.

2) The middle thyroid vein also drains into internal jugular vein.

3) The inferior thyroid vein drains in to brachio cephalic vein

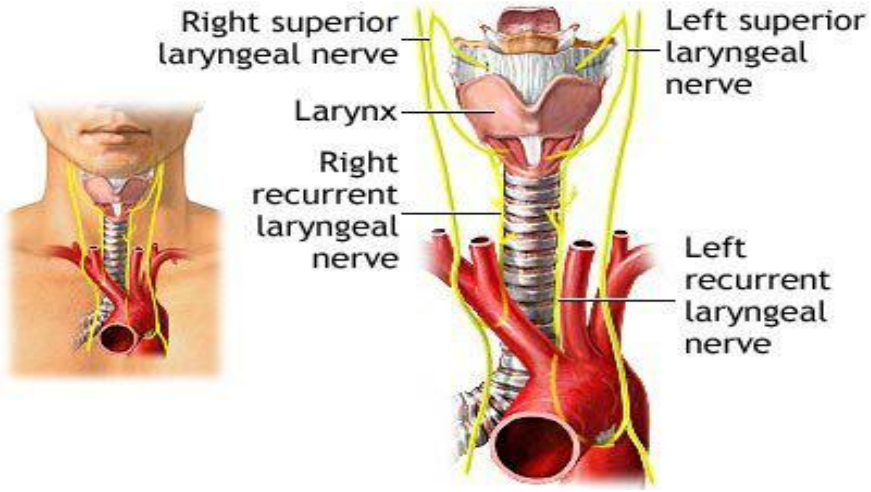
4) A fourth thyroid vein known as koher's vein may lie between middle and inferior thyroid vein and drains in to the internal jugular vein.

LYMPHATIC DRAINAGE

1) Lymphatics from the upper part of the gland drain in to upper deep cervical nodes directly or through the pre laryngeal nodes.

2) Lymphatics from the lower part of the gland either directly drain into lower deep cervical nodes or through the pre tracheal and paratracheal nodes..

NERVE SUPPLY



Thyroid gland is mainly supplied from the middle cervical ganglion and also partly from the superior and inferior cervical ganglion.

STRUCTURE AND FUNCTION

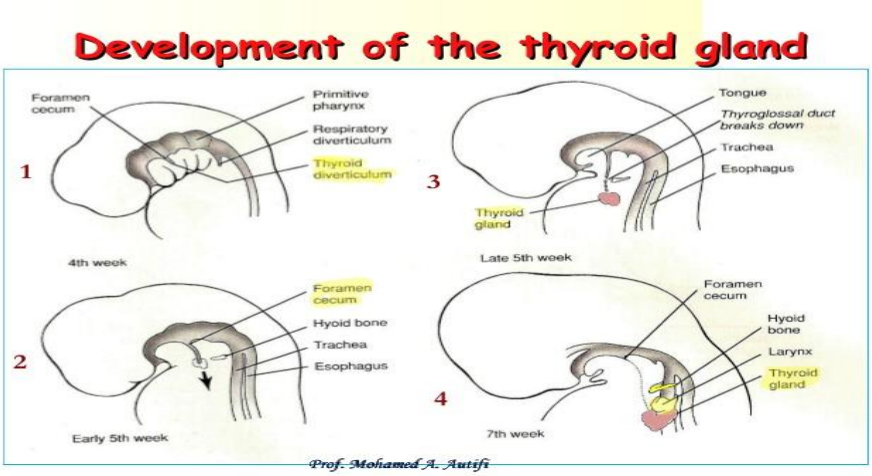
The thyroid gland consist of two types of secretory cells.

1) Follicular cells : It lines the follicles of the thyroid gland and secrete tri iodo thyronin and tetra iodo thyronin . It stimulates

the basal metabolic rate and somatic psychic growth of an individual.

2) Parafolicular cells : It lies in between the follicles. They secrete calcitonin which promotes calcium deposition in bones and other tissues.

DEVELOPMENT



The thyroid gland developed from a median endodermal diverticulum, which grows in front of the neck and the floor of the primitive pharynx , just caudal to the tuberculum impar. The lower end of the diverticulum enlarges to form the gland. The rest of the diverticulum remains narrow and is known as the thyroglossal duct.

THYROID ENLARGEMENT

Generalized enlargement of the thyroid gland is known as goiter

CLASSIFICATION

Simple Goiter

- Multi nodular goiter
- Diffuse hyperplastic

Toxic

- Diffuse
- Toxic adenoma
- Multinodular

Neoplastic

- Benign
- Malignant

Inflammatory

- Autoimmune
- Hashimoto's thyroiditis
- Chronic lymphocytic thyroiditis
- Granulomatous
- Riedel's thyroiditis

Indication for surgery in thyroid swelling

- Pressure symptoms
- Cosmetic purpose
- Toxic adenoma
- Neoplasia

THYROID OPERATION

1) Lobectomy = Unilateral total lobectomy + isthmusectomy

2) Subtotal thyroidectomy = Bisubtotal lobectomy + isthmusectomy

3) Total thyroidectomy = Bi total lobectomy + isthmusectomy

ROPIVACAINE

It is a long acting local anaesthetic agent belonging to aminoamide group.It is a pure S–enantiomer of 1-propyl-2c,6c-pipecoloxylidide.It is developed for the purpose of reducing cardio toxicity.It is more motor sparing than bupivacaine.

Molecular weight -274

PKa -8.1

Partition coefficient -2.9

Mean uptake ratio – 1.8.

Protein binding – 94%

MECHANISM OF ACTION

It reversibly inhibits sodium ion influx and blocks impulse conduction in nerve fibres. It acts on A-alpha and C nerves which are pain transmitting rather than A-beta fibers which are involved in motor function.

PHARMACOKINETICS

The total dose administered and the route of administration determines the plasma concentration. It bounds to plasma alpha 1 acid glycoprotein.

During caesarian section it rapidly crosses the placenta. But foetal total plasma concentration is very low.

PHARMACODYNAMICS:

It has higher threshold for cardiac and CNS toxicity due to less lipophilic and stereoselective properties .

METABOLISM AND EXCRETION:

It is metabolized in the liver by aromatic hydroxylation by cytochrome P450(CYP)1A2 and N-dealkylation.

Around 85% of the drug is excreted by kidney after an I.V injection.

DRUG INTERACTION:

When using with other local anaesthetics or with drugs having similar amide groups ,ropivacaine should be used with caution to avoid additive toxic effects. Imipramine and theophylline which are metabolized by CYP1A2 interacts with ropivacaine via competitive inhibition.

DOSAGE:

Indication	Concentration%	Volume	Dose
Surgical Anaesthesia			
(Caesarean Lumbar epidural section)	0.75	15-20 mL	113-150 mg
Lumbar epidural	0.75	15-25 mL	113-188 mg
(Other surgery)	1	15-20ml	150-200 mg
Thoracic	0.75	5-15ml	38-113mg
Intra thecal	0.5	3-4ml	15-20mg
Peripheral nerve block	0.75	10-40ml	75-300 mg
Field block	0.75	1-30 ml	7.5-225 mg
Post operative pain			
Lumbar epidural(continuous infusion)	0.2	6-10ml/h	12-20mg/h
Thoracic epidural(continuous infusion)	0.2	6-14ml/h	12-28mg/h
Peripheral nerve block(continuous infusion)	0.2	5-10ml/h	10-20mg/h
Field block	0.2	1-100ml	2-200mg
Intra articular injection	0.75	20ml	150mg
Labour pain (lumbar epidural)			
Bolus	0.2	10-20ml	20-40mg
Intermittent top ups	0.2	10-15ml	20-30mg
Continuous infusion	0.2	6-14ml/h	12-28mg/h
In children			
Caudal epidural block(below T12)	0.2	1ml/kg	2mg/kg
Peripheral nerve block(eg-ilio inguinal block)	0.5	0.6ml/kg	3mg/kg

CLINICAL APPLICATIONS

Various clinical studies evaluated the efficacy of ropivacaine .

Surgical anaesthesia . Ropivacaine is an effective regional anaesthetic.

EPIDURAL ROPIVACAINE

Epidural ropivacaine, administered primarily in the lumbar region used for Caesarean section , other abdominal or gynaecological procedures, and vascular surgeries.

INTRATHECAL ROPIVACAINE

It is less potent than bupivacaine intrathecaly. Hyperbaric solutions of ropivacaine resulted in a faster onset and recovery from the blocks. On a milligram for milligram basis, the potency of ropivacaine relative to bupivacaine is two-thirds with regard to sensory block and half with regard to motor block.

PERIPHERAL NERVE BLOCK

Onset and duration of action depends on the site of injection. For upperlimb procedures ropivacaine 0.5%,or 0.75% provides similar sensory and motor blockade for inter scalene, supraclavicular and axillary block when compared with 0.5% bupivacaine or 0.5% levobupivacaine. In lower limb blocks ropivacaine 0.75% has faster onset but shorter duration of sensory block when compared with 0.5% bupivacaine.

POST OPERATIVE PAIN

Lower doses are required for post operative pain .

CLONIDINE

Clonidine is an imidazoline derivative having complex actions. It is centrally acting selective partial α2-adrenergic agonist.

MECHANISM OF ACTION

The α2-adrenergic agonists produce clinical effects by binding to α2-receptors.

Alpha 2A receptors –sedation,sympatholysis,analgesia .

Alpha 2B receptors – vasoconstriction,antishivering effects.

Alpha 2C receptors – startle response.

Alpha 2 receptors are present in the pontine locus cereleus. By stimulating alpha 2 adrenergic neurons in medulla ,clonidine decreases sympathetic outflow to peripheral tissues from CNS . It causes decrease in blood pressure ,cardiac output and heart rate as well as peripheral vasodilatation.

In blood vessels alpha 2 receptors produce vasoconstriction and inhibit release of noradrenaline at peripheral sympathetic nervous system nerve endings.

The sedation quality produced by clonidine differs from that produced by drugs acting on GABA receptors(propofol,midazolam).

PHARMACOKINETICS

Orally it is well absorbed . 50% is metabolized in liver .1/2 to 2/3 of the drug is excreted unchanged in urine. Peak effect occurs at 2to 4 hrs. Effect lasts for 6 to 24 hrs for a single dose.

EFFECTS ON ORGAN SYSTEMS

CARDIOVASCULAR SYSTEM

It decreases systolic more than diastolic blood pressure . In patients on long duration of treatment , cardiac out put which is initially decreased returnes to predrug levels and systemic vascular resistance is little affected. Cardiovascular reflexes are maintained and the problem of orthostatic hypotension is avoided.

RESPIRATORY SYSTEM

Ventilation is minimally depressed. Opioid induced ventilatory depression is not increased.

CENTRAL NERVOUS SYSTEM

Sedation and anxiolysis are more consistently produced.It prevents shivering. MAC of inhalational anaesthetics are 50% decreased. Anaesthetic requirement of opioids are decreased. Analgesic effect of clonidine is not reversed by naloxone . It suppresses signs and symptoms of withdrawal symptoms of ethanol, benzodiazepines, and opioids effectively.

ADVERSE EFFECTS

1) postural hypotension can occur, but mostly asymptomatic.

2) Sedation ,disturbed sleep, mental depression, dryness of mouth nose , and eyes(central action), and constipation(anti secretory effect on intestine).

3) Due to reduced sympathetic tone bradycardia , salt and water retention , impotence can occur.

4) When doses are missed for 1 to 2 days alarming rise in blood pressure with tachycardia anxiety , sweating , headache, nausea and vomiting occur in some patients. Plasma catecholamine concentration is increased . This is due to (i)sudden removal of central sympathetic inhibition which results in large quantities of stored catecholamines, (ii)supersensitivity of peripheral adrenergic structures to catecholamines.

DRUG INTERACTION

Chlorpromazine and tricyclic antidepressants abolish the antihypertensive action of clonidine by blocking the alpha receptors.

USES

1) Antihypertensive: it was a popular antihypertensive drug in 1960s and 1970s.The risk of withdrawal hypertension and tolerance made it less useful now.

2) Preanaesthetic medication: Oral clonidine 5mcg/kg decreases BP and heart rate, blunts intubation response, decreases noradrenaline levels , decreases anaesthetic requirements of inhalational and intravenous drugs .

3) Analgesia : Epidural or sub arachnoid injection of clonidine (150-450mcg) produces analgesia but does not produce depression of ventilation, nausea, vomiting and delayed gastric emptying .

4) Regional anaesthesia : Clonidine increases the duration of both sensory and motor blockade when added to local anaesthetics . Clonidine is used by spinal, epidural ,parenteral , intra articular , and perineural routes for supplementing analgesia produced by local anaesthetics .

Epidural clonidine in large doses can produce sedation , bradycardia , and hypotension as side effects .So epidural clonidine is used in doses of 10-15 mcg/kg along with local anaesthetics and opioids to avoid side effects.

Maximum dose of intra thecal clonidine is 1 mcg/kg along with local anaesthetics .

In children for caudal block clonidine is used in 2-3mcg/kg along with local anaesthetics .

In peripheral nerve blocks also clonidine is used as an adjuvant to local anaesthetics to prolong the duration of analgesia .

5) Shivering control: clonidine 75 mcg iv controls shivering by inhibiting central thermo regulation.

6) In diagnosis of phaeochromocytoma

7) To decrease vasomotor symptoms of menopausal syndrome.

8) In diabetic neuropathy for controlling diarrhia.

9) In alcohol and opioid withdrawal syndrome .

Contraindications:

In disorders of cardiac impulse generation and cardiac conduction .

ASSESSMENT OF PAIN

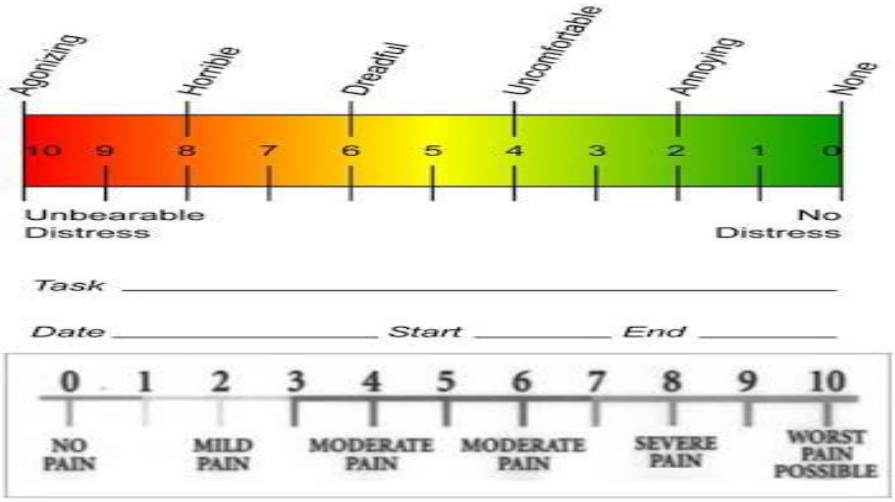
Pain is a subjective phenomenon. Acute pain is easy to assess and it reflects the actual tissue damage, unlike chronic pain.

Level of pain due to surgery changes rapidly over a period of time, in the post operative period . The assessment of pain shall be done by using simple measurement tools, so that pain treatment can be appropriately titrated . Pain is considered as the " fifth vital sign". It is mandatory to assess the pain accurately to make sure that the pain is managed effectively.

TOOLS FOR EVALUATION OF PAIN

Pain scoring system are available to assess the pain severity .

1. Visual Analogue Scale (VAS) : It is most commonly used for pain assessment. It consist of 100 mm scale. At one end , there is no pain, at other end worst imaginable pain.



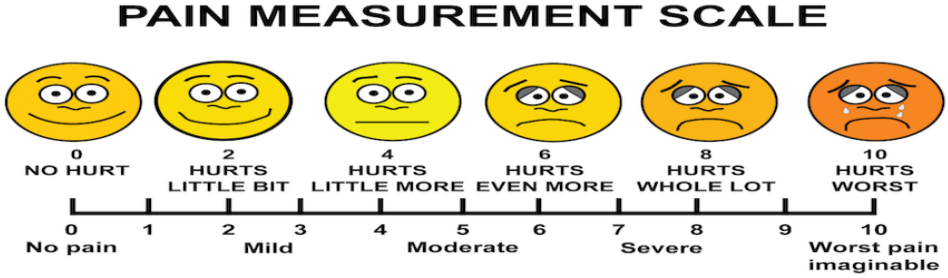
2. Numerical scale : This is 11 point scale system consist of score of 0 to 10 . 0 means no pain , 10 means worst imaginable pain.

3. Categorical : It consist of four or five point scaling system. The pain will be graded as none, mild , moderate , severe and excruciating . The disadvantage is , it lacks sensitivity , but advantage is , its simplicity

4. Mc Gill Pain Questionnaire (MPQ) : It measures the pain in multi- dimensional aspects. It measures affective , evaluative sensory and other aspects of pain and it consist of 20 questionnaires.

a.	1 – 10	:	Sensory aspect of pain
b.	11 – 15	:	Affective aspect of pain
c.	16	:	Evaluative aspect of pain
d.	17 – 20	:	Miscellaneous aspect of pain

5. . Happy – Sad face: A set of faces shown to a child or illiterate person to indicate his pain. The person will be asked to select the facial expression that suits for his pain . In this way pain can be assessed.



SEDATION

The main aims of sedation theraphy regimen are the effective management of pain ,sleep and anxiety and of these the management of pain is most important . Adequate post operative analgesia reduses the need for other sedation theraphy.

SEDATION SCORING SYSTEMS

1) Ramsay sedation scale.

2) Sedation agitation scale.

3) Comfort scale for the pediatric population.

4) Motor activity assessment scale.

RAMSAY SEDATION SCALE:

It is designed as a test of arousability. According to how arousable the patient is, the RSS score has six different levels.It is considered the sixth vital sign.

RAMSAY SEDATION SCALE

Score	response
1	Anxious, agitated or restless or both
2	Cooperative , oriented , tranquil.
3	Responding to commands only
4	Brisk response to light glabellar tap
5	Sluggish response to light glabellar tap
6	No response to light glabellar tap

REVIEW OF LITERATURE

1) **Sophie Aunac et al** 2002;95:746-750: performed both superficial and deep cervical plexus block in patient undergoing thyroid surgery. Three groups were randomly allotted to receive the block using normal saline (group A) , Ropivacaine (Group B), and Ropivacaine with clonidine (Group C) . The Results showed intra operative requirement were lower in group B, C than Group A. Post operative analgesic were also significantly reduced in Group B, Group C than Group A.

2) **Nathalie Dieudonne et al** Anesthesia and Analgesia 2001;92:1538-1542 performed the BSCPB at the end of thyroid surgery to study the analgesic efficacy of the block . Two groups were randomly assigned to receive the block using normal saline (group A) , Bupivacaine 0.25% with adrenaline 1 in 2 L (Group B) . Results showed group B require less morphine post operatively . It was concluded that BSCPB provides significant analgesia intra operative as well post operatively, and reduces the opioid requirement post operatively.

3) **G. Andrieu , H . Amrouni , E. Robin[2] Br J Anaesth 2007;99:561-566** studied the Analgesic efficacy of bilateral superficial cervical plexus block done under general anesthesia before thyroid surgery. Three groups consist of 30 patients were

given bilateral superficial cervical plexus block using normal saline , Ropivacaine and Ropivacaine , clonidine mixture. They studied the analgesic efficacy and intra operative and post operat ive opioid requirement . It has been found that patient who received the normal saline requires opioid and other analgesia in the form of acetaminophen higher than the patient who received Ropivacaine and Ropivacaine , clonidine mixture . It was concluded that Bilateral superficial cervical plexus block using ropivacaine and clonidine improved intra operative and post operative analgesia.

4) **Zeynep Eti et al** 2006;102 :1174-6 They studied the analgesic efficacy of local wound infiltration and Bilateral Superficial Cervical Plexus in patient undergoing thyroid surgery. Total of 45 patients were divided in to 3 group. Group 1 received local infiltration with bupivacaine , group 2 received BSCPB using bupivacaine 0.25 % and third group , no block was performed. Main outcome measured was Postoperative analgesic requirement , VAS score . Group 1 requires more analgesia than other two group. VAS Score and Analgesic requirement were similar between group 2 and group 3. It was concluded that there was no significant differences between the local infiltration and BSCPB group with respect to VAS score and Analgesic requirement

5) **Ming – Lang Shih , Quan – Yang Duh** 2010;34:2338-2343 studied the analgesic efficacy of bilateral superficial cervical plexus performed in patients undergoing thyroid surgery and also study whether it reduces the adverse effects of general anesthesia . Three groups were randomly allotted to receive the superficial cervical plexus using normal saline , 0.5% bupivacaine , and levobupivacaine 0.5% . The parameter studied to assess the analgesic efficacy are intra operative anesthetic(desflurane) , number of patient requiring post operative analgesia , time of rescue analgesia , VAS score .

6) **Gurkan Y , Tas Z , Toker K Solak M** 2015;29:579-584: In this study the ultrasound guided bilateral superficial cervical plexus block reduces the postoperative opioid consumption following thyroid surgery.

Fifty patient were included in this single blinded study. In this study, Bilateral superficial cervical plexus was performed under ultrasound guidance using 10 ml of 0.25% of bupivacaine.

Post operatively patient was provided with patient controlled analgesia using morphine. They have found that post operative morphine consumption was lower in patient who received block than control group.

It was concluded that ultrasound guided bilateral superficial cervical plexus block performed before thyroid surgery reduces the opioid requirement postoperatively.

Results showed end tidal desflurane concentration were lower in patient who received bupivacaine group compared to normal saline group. It takes longer time for rescue analgesia post operatively for patients who received bupivacaine than normal saline. VAS score were lower in group who received bupivacaine.

7) **Issak kesisoglou, M.D , PhD , Theodosis et al** 2010;32:984-988 Bilateral superficial cervical plexus block was given to 100 patients undergoing thyroid surgery. Two groups are allotted. Group A received normal saline, while Group B received Ropivacaine . The parameters studied were Pain score, and analgesic requirement. Pain score was noted 0 ,3 , 6 , 9 , 12, and 24 hrs after surgery. Results showed analgesic requirement was similar between the two groups. But Pain score was significantly lower in group B . It was concluded that BSCPB reduces pain score post operatively with no significant differences in analgesic requirement.

8) **Danelli G et al** in patients undergoing elective carotid endarterectomy evaluated the effects of ropivacaine 150 mg with

clonidine 50mcg for superficial cervical plexus block. They concluded that BSCPB improved the quality of anaesthesia.

9) **Rita Pal et al** studied using bupivacaine and clonidine the analgesic efficacy of cervical plexus block. In bupivacaine plus clonidine group the duration of post op analgesia was significantly higher than in bupivacaine group.Total requirement of fentanyl is also significantly less.

10) **Giovanni cucchiaro et al** evaluated the effects of clonidine in various peripheral nerve blocks in children . In the clonidine with local anaesthetic group the duration of analgesia was significantly longer than in the local anaesthetic group.The increased duration was not depending on the local anaesthetic type of peripheral nerve block .

11) **H, EI Saied et al** demonstrated increased duration of block and analgesia in brachial plexus block by the addition of clonidine 150 microgm to ropivacaine without any significant side effects.

MATERIALS AND METHODS

This is a prospective,randomized double blinded placebo controlled study done in 60 patients undergoing total thyroidectomy under general anaesthesia at Rajiv Gandhi Government General hospital,Chennai in 2016. The study was approved by institutional ethical committee.Informed consent was obtained from all the patients in the study.

SELECTION OF CASES

Inclusion Criteria

- Age : 18 years to 60 yrs
- ASA : I,II
- Surgery : Elective
- Euthyroid state
- Who have given valid informed consent.

Exclusion Criteria

- Not satisfying inclusion criteria.
- Patients posted for emergency surgery
- Patients with difficult airway
- Lack of written informed consent

- Pregnant female
- H/O seizures and any neurological deficit
- Poor lung compliance such as pulmonary fibrosis
- Allergy to drugs used.
- Patient refusal.
- Patients with severe cardiovascular ,respiratory, renal, hepatic diseases.

Thorough physical and clinical examination was done preoperatively. All the investigations verified. Assessment of the airway was done.

Patients were randomly assigned by closed envolepe method into group A (normal saline), B (inj ropivacaine 0.2%), and C(inj ropivacaine 0.2% and clonidine 2 microgm/kg).

The baseline heart rate ,blood pressure and Spo2 were recorded. All patients were preloaded with 10ml/kg of normal saline and premedicated with inj. Glycopyrolate 0.2mg intravenously.

Patient was induced with inj. Fentanyl 2 microgm/kg, Inj thiopentone 4mg/kg and then Inj atracurium 0.5 mg/kg given .Patient intubated with appropriate size endotracheal tube, maintained with O2;N2O 1;2 ,sevoflurane 1%. Bilateral superficial and deep cervical

plexus block was given under ultrasound guidance by an anaesthetist who is familiar in this technique after induction. The injection given was not known to the patient, surgeon,anaesthesiologist, and the assessing doctor in the PACU.

The superficial cervical plexus block was performed bilaterally by using the 23 G needle inserted at the midpoint of the lateral border of the sternocleidomastoid muscle. After negative aspiration, 6 mL of solution was injected in four directions (1.5 mL in each direction) to block the main branches (lesser occipital, greater auricular, transverse cervical, and supraclavicular nerves) of the plexus.

The deep cervical plexus block was performed under ultrasound guidance .The C3 level is marked by surface marking .the transduser is positioned from medial to laterally and posterierly moved till the transverse process of C3 is identified.The needle is inserted by out of plane technique and the needle tip is placed at the tip of the transverse process near the nerve .After negative aspiration 8 ml of the solution was injected.This is repeated on the other side of the neck.

Blood pressure, Spo2 and heart rate were measured every 5 minutes till the surgery is over.Inj atracurium 0.1mg/kg was given every 30 minutes.When the heart rate or the systolic blood pressure rises more than 20%, inj fentanyl 0.3 microgm/kg was given . Both the fentanyl requirements and the duration of surgery were noted.

At the end of surgery, patient was reversed with 50 mcg / kg of neostigmine with 10 mcg /kg of inj. glycopyrolate I.V. Thorough oral suctioning was done . Patient extubated after adequate neuromuscular recovery. Postoperative laryngoscope done for vocal cord movement assessment.

Patient was shifted to PACU post operatively. In PACU VAS score as a measure of post operative pain , heart rate, blood pressure, and sedation score were measured for every 30 minutes upto 6 hours and every 4 hours upto 24 hours. For patient with VAS score > 4 , rescue analgesia in the form of I.V paracetamol 10mg/kg i.v administered as first rescue analgesia. For the second rescue tramadol 100 mg i.m was used. Patient was observed for complication related to procedure and recorded.

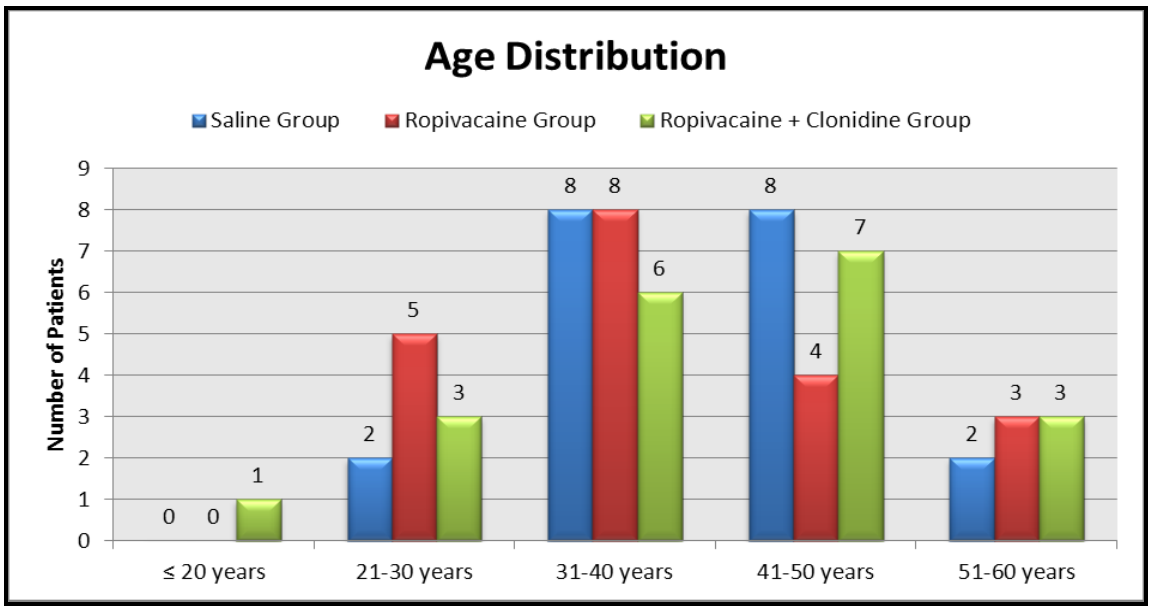
OBSERVATION, RESULTS AND ANALYSIS

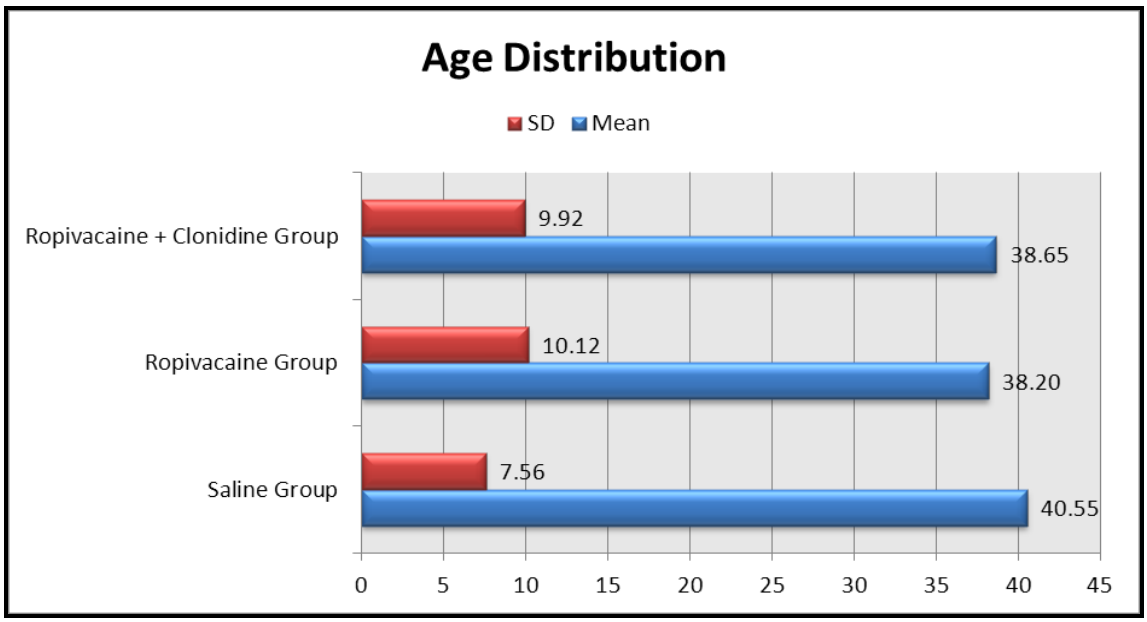
Descriptive statistics was done for all data and were reported in terms of mean values and percentages. Suitable statistical tests of comparison were done. Continuous variables were analysed with the unpaired t test.. Categorical variables were analysed with the Chi-Square Test and Fisher Exact Test. Statistical significance was taken as $P < 0.05$. The data was analysed using SPSS version 16 and Microsoft Excel 2007.

GROUPS

Group	Intervention	Number
Saline Group	Isotonic Saline	20
Ropivacaine Group	Injection Ropivacaine(0.2%)	20
Ropivacaine + Clonidine Group	injection Ropivacaine (0.2%) with Clonidine (2mcg/kg)	20

AGE


Age Distribution
Saline Group
Ropivacaine Group
Ropivacaine + Clonidine Group
Number of Patients
0 1 2 3 4 5 6 7 8 9
0 0 1
2 5 3
8 8 6
8 4 7
2 3 3
≤ 20 years
21-30 years
31-40 years
41-50 years
51-60 years

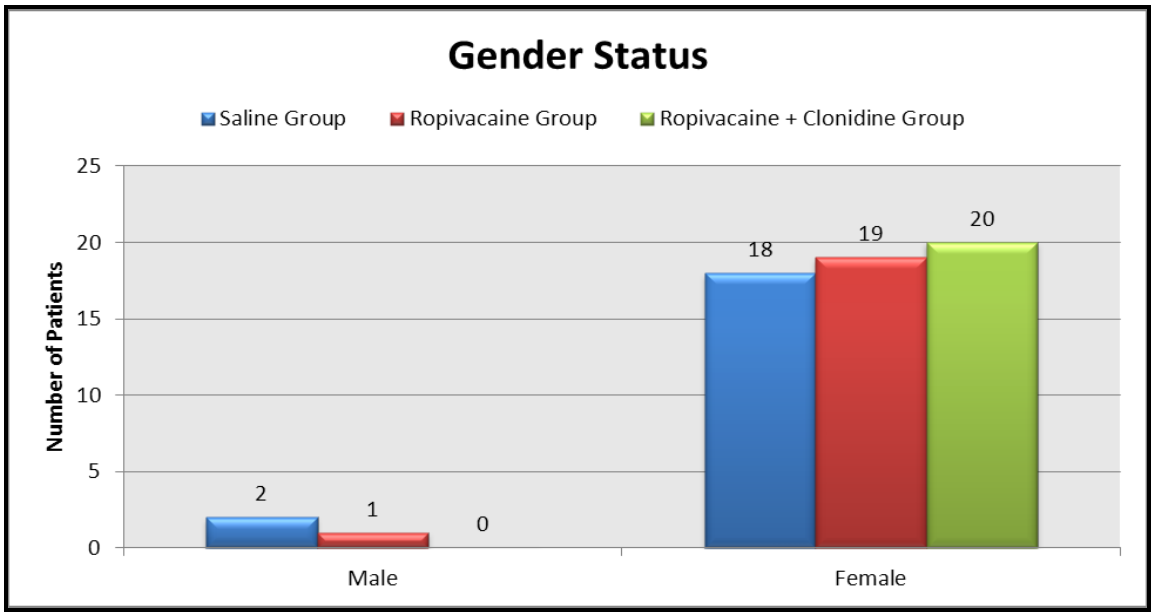

Age Distribution
SD
Mean
Ropivacaine + Clonidine Group
Ropivacaine Group
Saline Group
9.92
38.65
10.12
38.20
7.56
40.55
0 5 10 15 20 25 30 35 40 45

Age Distribution	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
≤ 20 years	0	0.00	0	0.00	1	5.00
21-30 years	2	10.00	5	25.00	3	15.00
31-40 years	8	40.00	8	40.00	6	30.00
41-50 years	8	40.00	4	20.00	7	35.00
51-60 years	2	10.00	3	15.00	3	15.00
Total	20	100	20	100	20	100

Age Distribution	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	40.55	38.20	38.65
SD	7.56	10.12	9.92
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		0.4106
	Saline Group Vs Ropivacaine + Clonidine Group		0.4998
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		0.8878

Majority of the saline group patients belonged to 31-40 and 41-50 years age class interval (n=8, 53.33%) with a mean age of 40.55 years. In the ropivacaine group patients, majority belonged to 31-40 years class interval (n=8, 53.33%) with a mean age of 38.20 years. In the ropivacaine + clonidine group patients, majority belonged to 38.65 years class interval (n=7, 35.00%) with a mean age of 35.77 years. The association between the intervention groups and age distribution is considered to be not statistically significant since $p > 0.05$ as per unpaired t test.

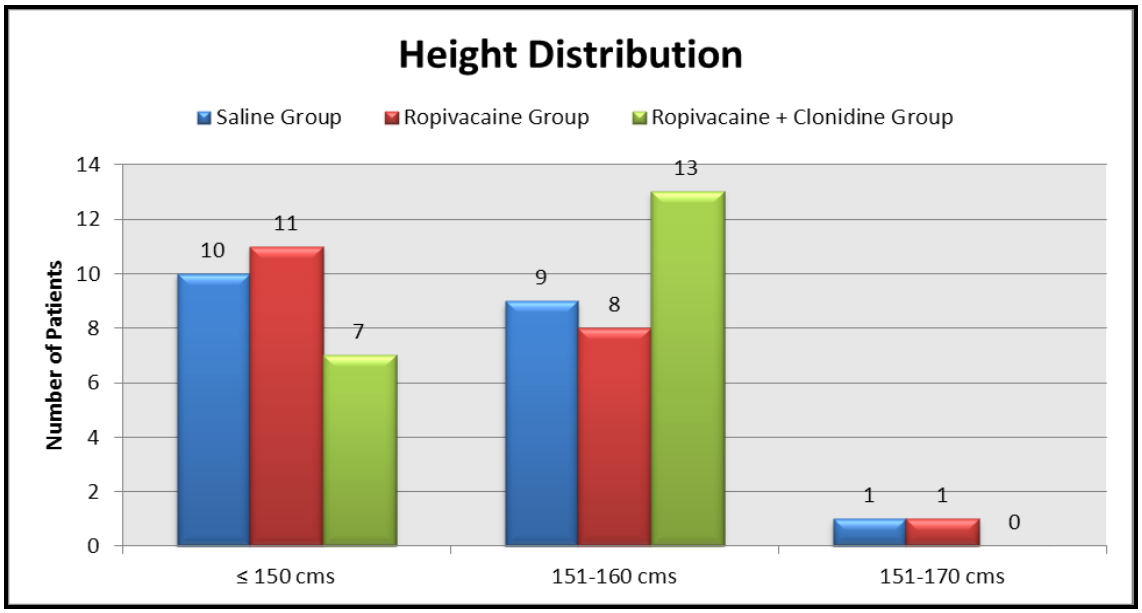
GENDER

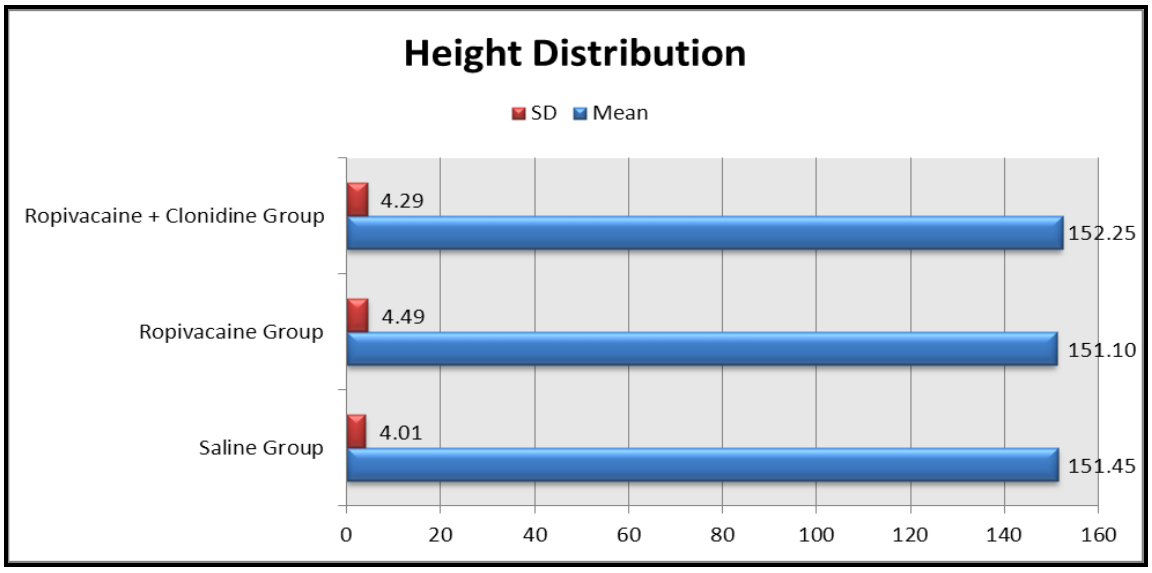


Gender Status	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
Male	2	10.00	1	5.00	0	0.00
Female	18	90.00	19	95.00	20	100.00
Total	20	100	20	100	20	100
P Value Fishers Exact Test			Saline Group Vs Ropivacaine Group			0.6154
			Saline Group Vs Ropivacaine + Clonidine Group			0.2436
			Ropivacaine Group Vs Ropivacaine + Clonidine Group			0.5000

Majority of the saline group (n-8, 90.00%), ropivacaine group (n-19, 95.00%), and ropivacaine + clonidine group (n=20,100.00%) patients belonged to female gender. The association between the intervention groups and gender status is considered to be not statistically significant since P > 0.05 as per Fisher's exact test..

HEIGHT



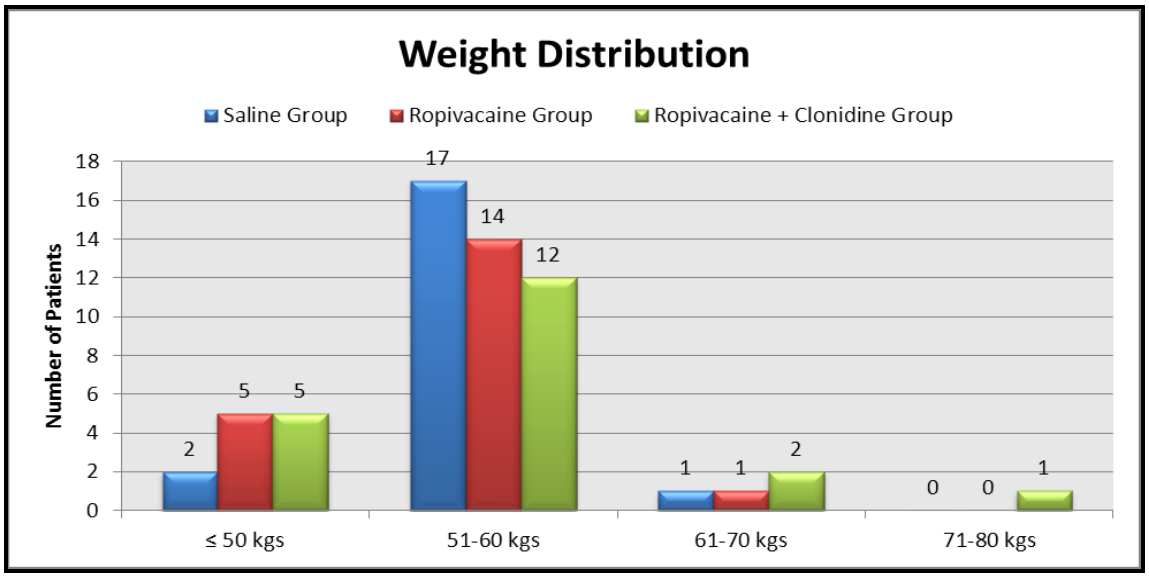


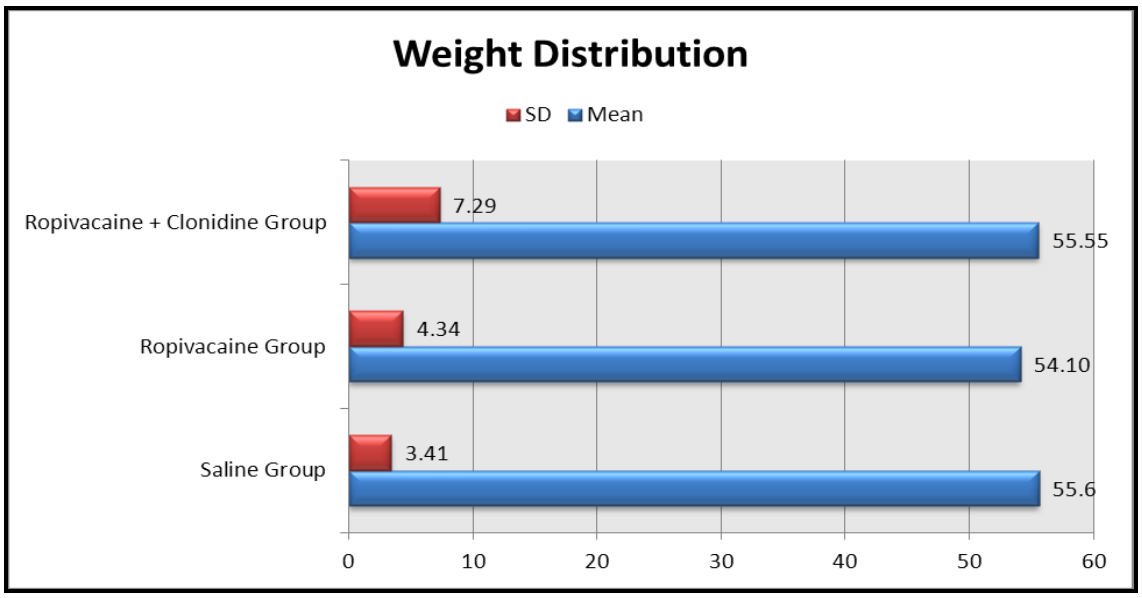
Height Distribution	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
≤ 150 cms	10	50.00	11	55.00	7	35.00
151-160 cms	9	45.00	8	40.00	13	65.00
151-170 cms	1	5.00	1	5.00	0	0.00
Total	20	100	20	100	20	100

Height Distribution	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	151.45	151.10	152.25
SD	4.01	4.49	4.29
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		0.7963
	Saline Group Vs Ropivacaine + Clonidine Group		0.5458
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		0.4130

Majority of the saline group patients belonged to < 150 cms height class interval (n=10, 50.00%) with a mean height of 151.45 cms. In the ropivacaine group patients, majority belonged to < 150 cms class interval (n=11, 55.00%) with a mean height of 151.10 cms. In the ropivacaine + clonidine group patients, majority belonged to 152.25 cms class interval (n=13, 65.00%) with a mean height of 35.77 cms. The association between the intervention groups and height distribution is considered to be not statistically significant since $p > 0.05$ as per unpaired t test.

WEIGHT



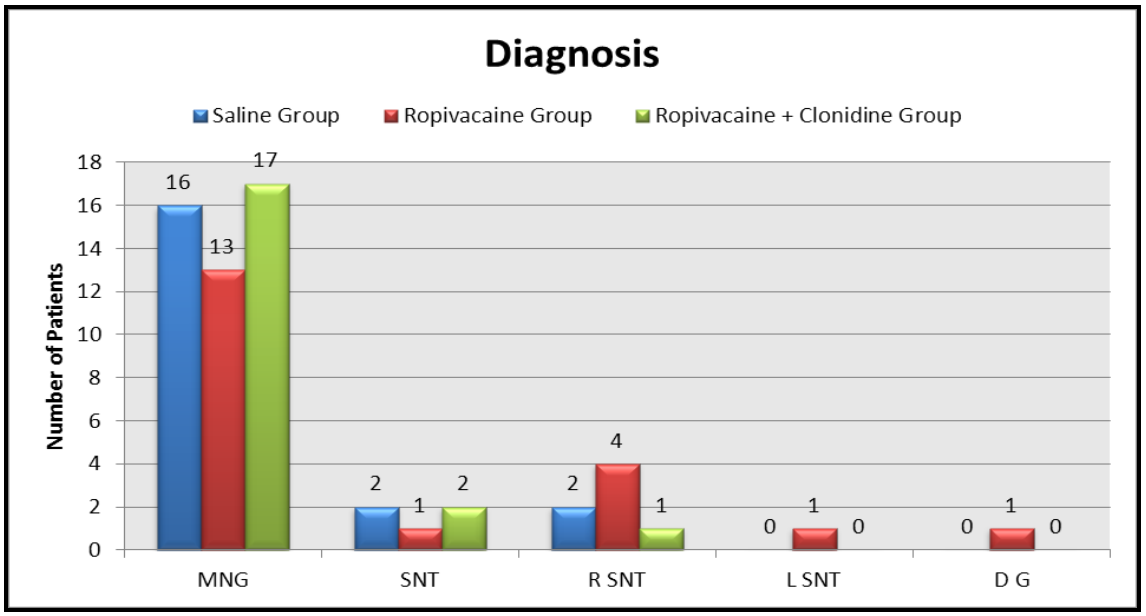


Weight Distribution	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
≤ 50 kgs	2	10.00	5	25.00	5	25.00
51-60 kgs	17	85.00	14	70.00	12	60.00
61-70 kgs	1	5.00	1	5.00	2	10.00
71-80 kgs	0	0.00	0	0.00	1	5.00
Total	20	100	20	100	20	100

Weight Distribution	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	55.60	54.10	55.55
SD	3.41	4.34	7.29
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		0.2316
	Saline Group Vs Ropivacaine + Clonidine Group		0.9780
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		0.4496

Majority of the saline group patients belonged to 51-60 kgs weight class interval (n=17, 85.00%) with a mean weight of 55.60 kgs. In the ropivacaine group patients, majority belonged to to 51-60 kgs class interval (n=14, 70.00%) with a mean weight of 54.10 kgs. In the ropivacaine + clonidine group patients, majority belonged to 51-60 kgs class interval (n=12, 60.00%) with a mean weight of 55.55 kgs. The association between the intervention groups and weight distribution is considered to be not statistically significant since $p > 0.05$ as per unpaired t test.

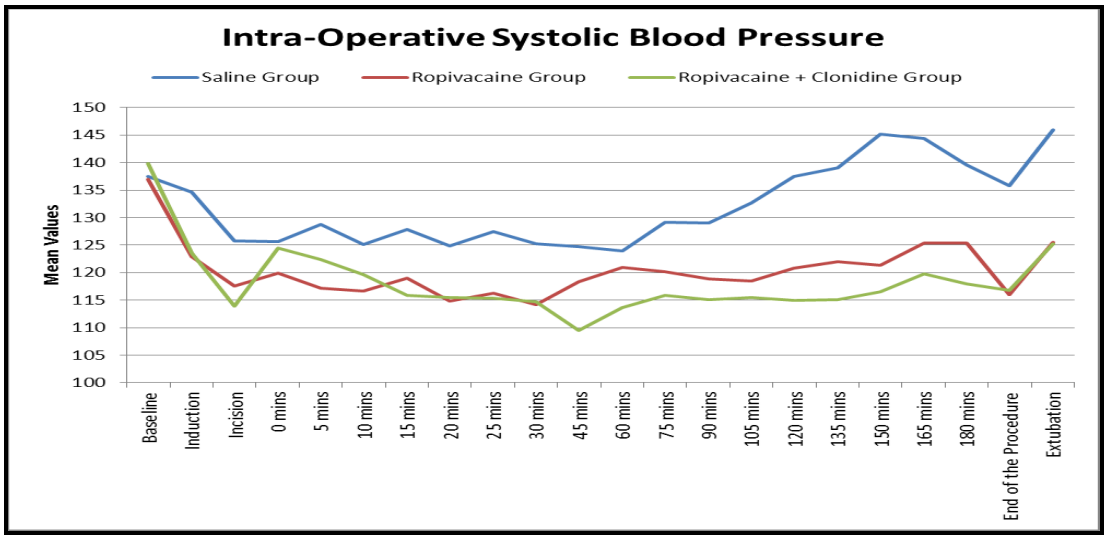
DIAGNOSIS



Diagnosis	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
MNG	16	80.00	13	65.00	17	85.00
SNT	2	10.00	1	5.00	2	10.00
R SNT	2	10.00	4	20.00	1	5.00
L SNT	0	0.00	1	5.00	0	0.00
D G	0	0.00	1	5.00	0	0.00
Total	20	100	20	100	20	100
P Value Fishers Exact Test			Saline Group Vs Ropivacaine Group			0.4250
			Saline Group Vs Ropivacaine + Clonidine Group			>0.9999
			Ropivacaine Group Vs Ropivacaine + Clonidine Group			0.2213

Majority of the saline group (n-16, 80.00%), ropivacaine group (n-13, 65.00%), and ropivacaine + clonidine group (n=17,85.00%) patients belonged to MNG diagnosis group. The association between the intervention groups and diagnosis status is considered to be not statistically significant since p > 0.05 as per fishers exact test .

INTRA-OPERATIVE SYSTOLIC BLOOD PRESSURE



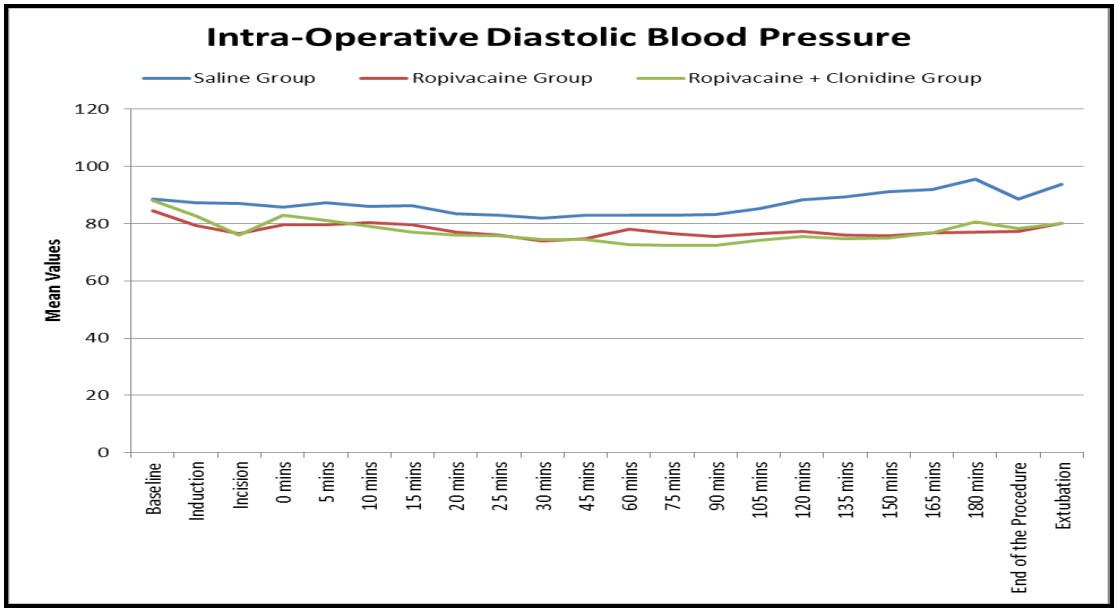
At baseline, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative SBP of 137.50, 137.00 and 139.80 mm Hg respectively. Between induction and extubation, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative SBP of 132.01, 119.58 and 117.21 mm Hg respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and intraoperative SBP beginning at induction and extending to extubation intraoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (ropivacaine group vs ropivacaine + clonidine) and intraoperative SBP 60-135 minutes intraoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Intra-Operative Systolic Blood Pressure (mm Hg)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidineoup	Ropivacaine Group Vs Ropivacaine + Clonidine Group
Baseline	137.50	12.66	137.00	12.15	139.80	11.43	0.8993	0.5501	0.4576
Induction	134.65	17.59	122.90	11.43	123.60	6.77	0.0167	0.0125	0.8150
Incision	125.75	15.20	117.50	9.71	113.90	7.81	0.0478	0.0036	0.2043
0 mins	125.60	16.97	119.95	9.89	124.40	10.86	0.2060	0.7914	0.1835
5 mins	128.80	15.38	117.10	7.82	122.40	11.42	0.0044	0.1435	0.0950
10 mins	125.15	14.88	116.70	7.99	119.60	10.28	0.0312	0.1780	0.3255
15 mins	127.85	15.78	118.95	9.31	115.90	9.85	0.0361	0.0066	0.3205
20 mins	124.90	15.44	114.80	10.72	115.45	6.13	0.0213	0.0152	0.8153
25 mins	127.45	12.83	116.20	9.09	115.40	6.27	0.0028	0.0005	0.7478
30 mins	125.20	14.13	114.20	8.09	114.75	6.54	0.0045	0.0047	0.8144
45 mins	124.75	10.99	118.40	9.17	109.45	22.83	0.0445	0.0103	0.1120
60 mins	124.00	11.68	121.00	7.25	113.60	7.60	0.3352	0.0019	0.0032
75 mins	129.20	11.56	120.15	7.44	115.85	9.97	0.0055	0.0004	0.1305
90 mins	129.06	13.69	118.85	6.93	115.11	7.70	0.0060	0.0005	0.1186
105 mins	132.69	14.39	118.41	8.21	115.47	8.45	0.0013	0.0001	0.2986
120 mins	137.50	11.24	120.82	8.45	115.00	6.85	0.0001	<0.0001	0.0381
135 mins	139.00	12.19	122.00	8.27	115.13	7.61	0.0005	<0.0001	0.0306
150 mins	145.14	11.51	121.27	6.69	116.50	6.26	<0.0001	<0.0001	0.0917
165 mins	144.33	16.20	125.33	6.43	119.80	6.96	0.1320	0.0021	0.2463
180 mins	139.50	12.02	125.33	6.43	118.00	9.09	0.2244	0.0663	0.3475
End of the Procedure	135.80	10.93	115.95	8.08	116.80	9.55	<0.0001	<0.0001	0.7628
Extubation	146.00	10.53	125.45	9.92	125.25	6.20	<0.0001	<0.0001	0.9394

Intra-Operative Diastolic Blood Pressure



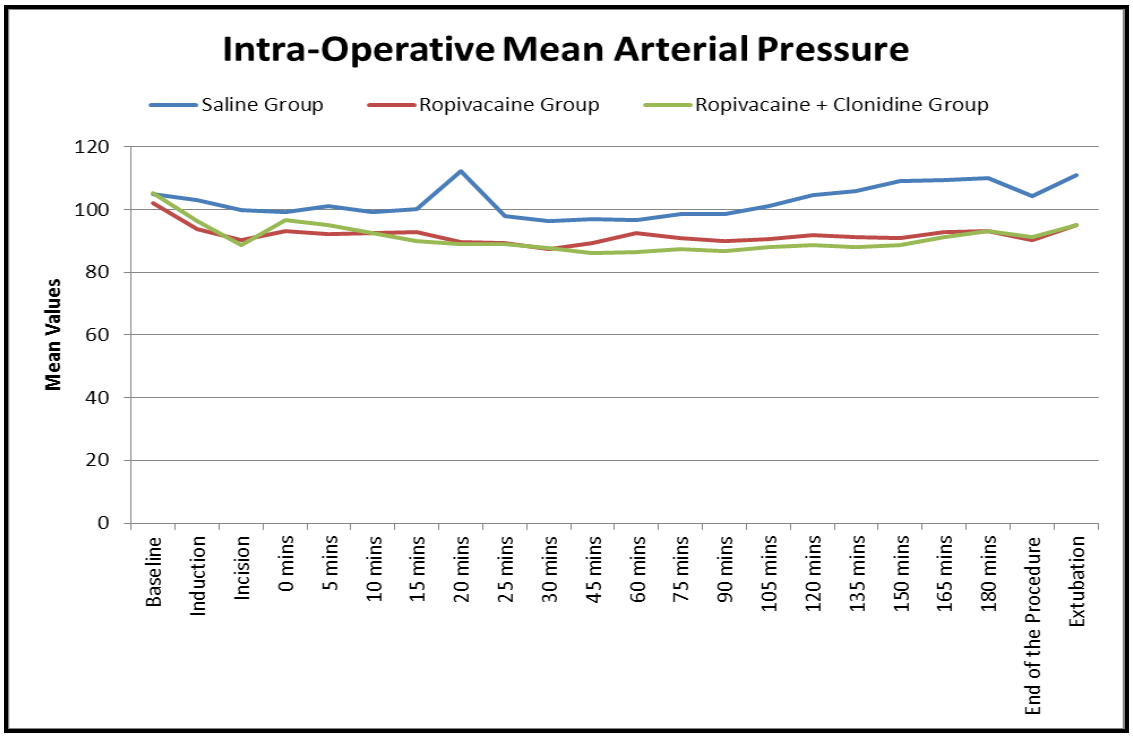
At baseline, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative DBP of 88.50, 84.60 and 88.20 mm Hg respectively. Between induction and extubation, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative DBP of 88.68, 77.30 and 76.77 mm Hg respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group) and intraoperative DBP beginning at induction and extending to extubation intraoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine + clonidine) and intraoperative DBP beginning at incision and extending to extubation intraoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Intra-Operative Diastolic Blood Pressure (mm Hg)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Saline Group Vs Ropivacaine Group**	**Saline Group Vs Ropivacaine + Clonidine Group**	**Ropivacaine Group Vs Ropivacaine + Clonidine Group**
Baseline	88.50	7.37	84.60	8.44	88.20	5.95	0.1279	0.8882	0.1273
Induction	87.40	10.58	79.35	8.65	82.70	5.45	0.0122	0.0855	0.1511
Incision	87.00	10.75	76.60	8.71	76.00	7.55	0.0018	0.0006	0.8171
0 mins	85.85	12.28	79.70	8.84	83.00	8.25	0.0770	0.3942	0.2296
5 mins	87.30	13.77	79.55	6.87	81.25	8.44	0.0302	0.1021	0.4891
10 mins	86.15	13.21	80.35	6.90	79.00	7.19	0.0899	0.0401	0.5482
15 mins	86.35	13.32	79.65	7.30	76.95	8.46	0.0559	0.0113	0.2866
20 mins	83.35	11.03	77.05	8.09	75.95	8.32	0.0463	0.0216	0.6741
25 mins	82.95	9.02	75.95	8.44	75.85	6.60	0.0155	0.0072	0.9669
30 mins	81.90	8.43	73.90	5.93	74.35	7.08	0.0013	0.0040	0.8287
45 mins	82.90	8.33	74.80	7.88	74.55	6.01	0.0031	0.0008	0.9108
60 mins	82.90	7.59	78.10	8.10	72.75	5.55	0.0406	0.0000	0.0196
75 mins	83.05	8.04	76.45	8.13	72.30	8.86	0.0138	0.0003	0.1309
90 mins	83.18	9.67	75.50	7.24	72.37	7.90	0.0092	0.0008	0.2047
105 mins	85.38	8.48	76.59	6.97	74.16	5.98	0.0027	0.0001	0.2683
120 mins	88.43	6.99	77.18	8.19	75.56	6.67	0.0003	0.0000	0.5408
135 mins	89.36	7.58	76.08	8.89	74.67	6.33	0.0008	0.0000	0.6294
150 mins	91.14	4.71	75.82	8.34	75.00	6.13	0.0004	0.0000	0.7901
165 mins	92.00	5.29	76.67	5.77	76.80	3.46	0.0275	0.0001	0.9603
180 mins	95.50	4.95	76.67	5.77	80.50	9.47	0.0116	0.0132	0.7712
End of the Procedure	88.65	8.28	77.30	7.79	78.40	6.10	0.0001	0.0001	0.6218
Extubation	93.75	5.39	80.00	8.42	80.05	7.08	<0.0001	<0.0001	0.9839

Intra-Operative Mean Arterial Pressure

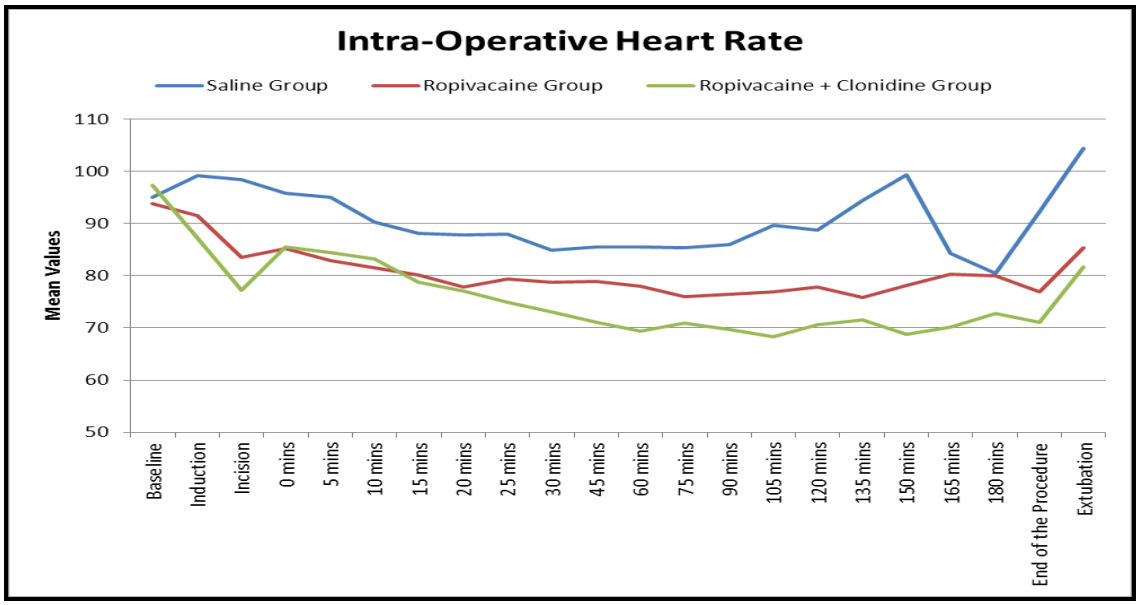


At baseline, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative MAP of 104.83, 102.07 and 105.40 mm Hg respectively. Between induction and extubation, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative MAP of 102.64, 91.39 and 90.28 mm Hg respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and intraoperative MAP beginning at induction and extending to extubation intraoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Intra-Operative Mean Arterial Pressure (mm Hg)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
Baseline	104.83	7.81	102.07	8.74	105.40	6.73	0.2979	0.8071	0.1846
Induction	103.15	12.43	93.87	9.21	96.33	4.18	0.0107	0.0255	0.2822
Incision	99.92	11.33	90.23	8.51	88.63	6.69	0.0041	0.0005	0.5125
0 mins	99.10	13.18	93.12	8.29	96.80	7.32	0.0438	0.4992	0.1446
5 mins	101.13	13.54	92.07	6.23	94.97	8.01	0.0098	0.0877	0.2090
10 mins	99.15	13.23	92.47	6.15	92.53	7.17	0.0475	0.0267	0.9750
15 mins	100.18	13.78	92.75	6.62	89.93	8.15	0.0360	0.0068	0.2378
20 mins	112.20	64.93	89.63	7.84	89.12	6.99	0.1311	0.1222	0.8270
25 mins	97.78	8.86	89.37	8.05	89.03	5.56	0.0032	0.0006	0.8797
30 mins	96.33	9.62	87.33	6.23	87.82	5.87	0.0012	0.0017	0.8020
45 mins	96.85	7.88	89.33	7.14	86.18	8.90	0.0031	0.0003	0.2247
60 mins	96.60	7.61	92.40	6.68	86.37	5.36	0.0413	<0.0001	0.1132
75 mins	98.43	7.09	91.02	6.86	87.42	7.29	0.0018	<0.0001	0.1162
90 mins	98.47	9.05	89.95	6.03	86.61	6.84	0.0016	0.0001	0.1142
105 mins	101.15	8.48	90.53	6.71	87.93	5.68	0.0004	<0.0001	0.2167
120 mins	104.79	6.62	91.73	7.68	88.71	5.80	<0.0001	<0.0001	0.2143
135 mins	105.91	7.50	91.38	8.11	88.16	5.49	0.0002	<0.0001	0.2233
150 mins	109.14	6.78	90.97	7.25	88.83	4.65	0.0001	<0.0001	0.4054
165 mins	109.44	8.86	92.89	5.98	91.13	3.27	0.0350	0.0001	0.5084
180 mins	110.17	0.71	92.89	5.98	93.00	8.73	0.0223	0.0489	0.3672
End of the Procedure	104.37	7.70	90.18	7.30	91.20	6.58	<0.0001	<0.0001	0.6463
Extubation	111.17	5.31	95.15	8.12	95.12	5.58	<0.0001	<0.0001	0.9880

Intra-Operative Heart Rate



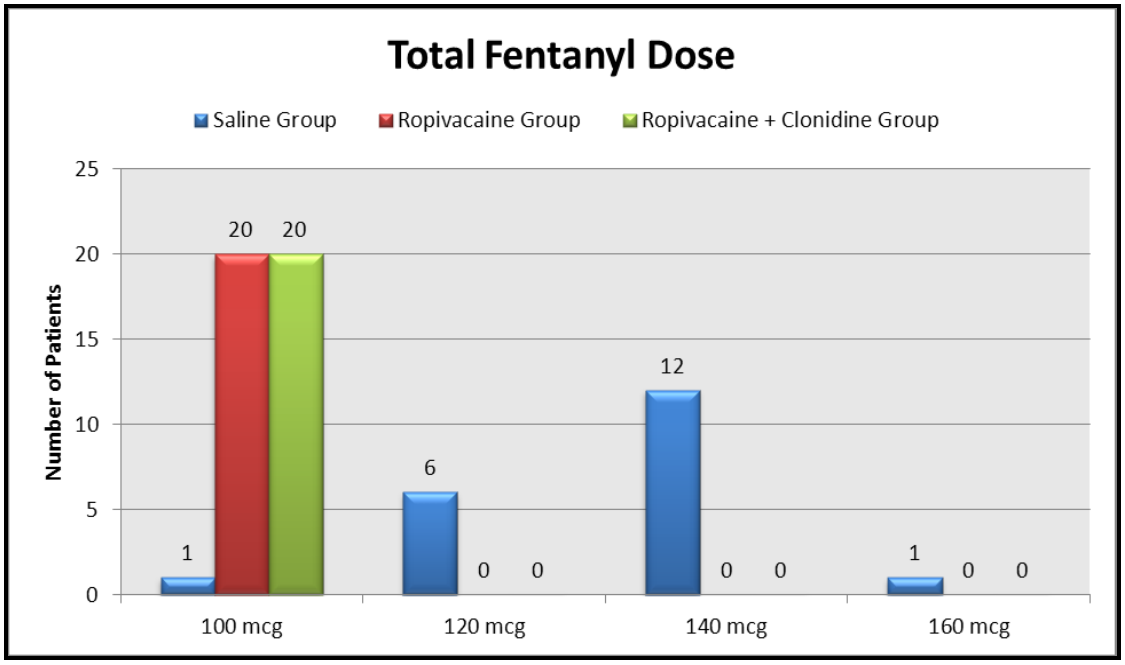
At baseline, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative heart rate of 95.10, 93.90 and 97.40 bpm respectively. Between induction and extubation, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean intraoperative heart rate of 90.66, 80.09 and 75.10 bpm respectively.

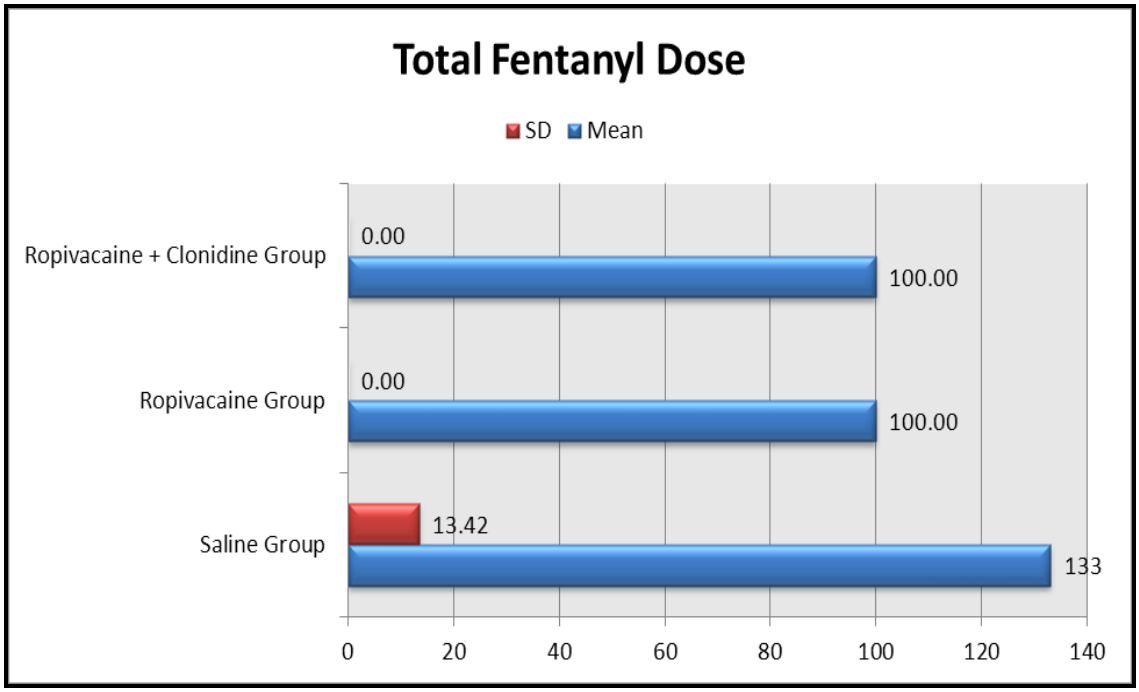
By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and intraoperative heart rate beginning at induction and extending to extubation intraoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (ropivacaine group vs ropivacaine + clonidine) and intraoperative heart rate between 30 minutes and end of procedure intraoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Intra-Operative Heart Rate (bpm)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
Baseline	95.10	9.27	93.90	13.71	97.40	10.64	0.7475	0.4706	0.3728
Induction	99.16	10.48	91.60	12.87	87.15	8.40	0.0524	0.0003	0.2032
Incision	98.40	12.39	83.55	11.66	77.15	8.27	0.0004	<0.0001	0.0524
0 mins	95.90	14.75	85.20	12.21	85.50	8.54	0.0169	0.0096	0.9287
5 mins	95.00	14.41	82.95	10.83	84.45	7.39	0.0049	0.0060	0.6120
10 mins	90.25	13.68	81.55	11.41	83.20	5.57	0.0352	0.0393	0.5646
15 mins	88.10	14.23	80.15	8.67	78.80	6.24	0.0394	0.0109	0.5752
20 mins	87.85	15.03	77.80	7.65	77.05	6.85	0.0112	0.0058	0.7457
25 mins	88.05	12.36	79.40	10.82	74.90	7.68	0.0238	0.0003	0.1376
30 mins	84.90	14.11	78.80	10.43	73.00	6.71	0.1283	0.0016	0.0432
45 mins	85.50	16.60	78.90	8.52	71.05	6.79	0.1219	0.0009	0.0026
60 mins	85.60	17.45	78.05	8.69	69.35	5.53	0.0915	0.0003	0.0005
75 mins	85.35	17.17	75.95	9.46	70.95	7.94	0.0384	0.0016	0.0782
90 mins	86.00	15.00	76.45	9.72	69.63	7.30	0.0256	0.0002	0.0184
105 mins	89.63	16.51	76.88	8.95	68.26	6.24	0.0092	<0.0001	0.0018
120 mins	88.71	15.00	77.76	8.66	70.56	8.52	0.0166	0.0003	0.0222
135 mins	94.45	16.87	75.77	8.27	71.47	9.20	0.0019	0.0002	0.2075
150 mins	99.43	25.61	78.09	7.06	68.83	6.18	0.0174	0.0009	0.0030
165 mins	84.33	21.08	80.33	15.89	70.20	7.15	0.8059	0.0785	0.1284
180 mins	80.50	27.58	80.33	15.89	72.75	12.04	0.5483	0.6320	0.1323
End of the Procedure	92.25	11.85	76.95	8.55	71.00	7.65	<0.0001	<0.0001	0.0259
Extubation	104.40	10.43	85.45	8.28	81.75	7.64	<0.0001	<0.0001	0.1501

Total Fentanyl Dose



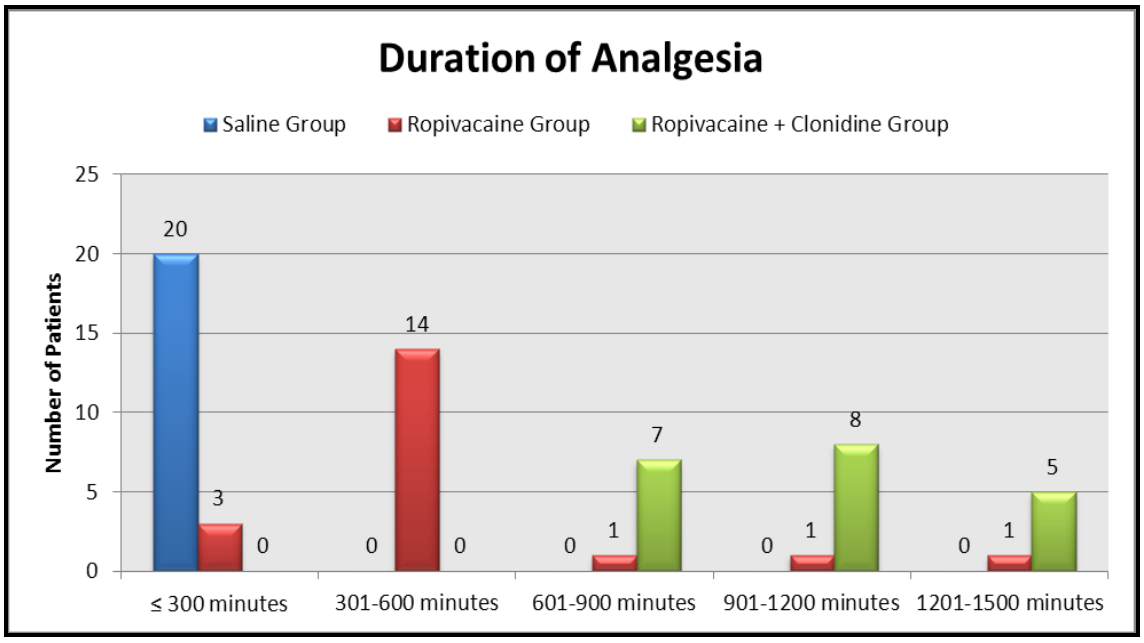


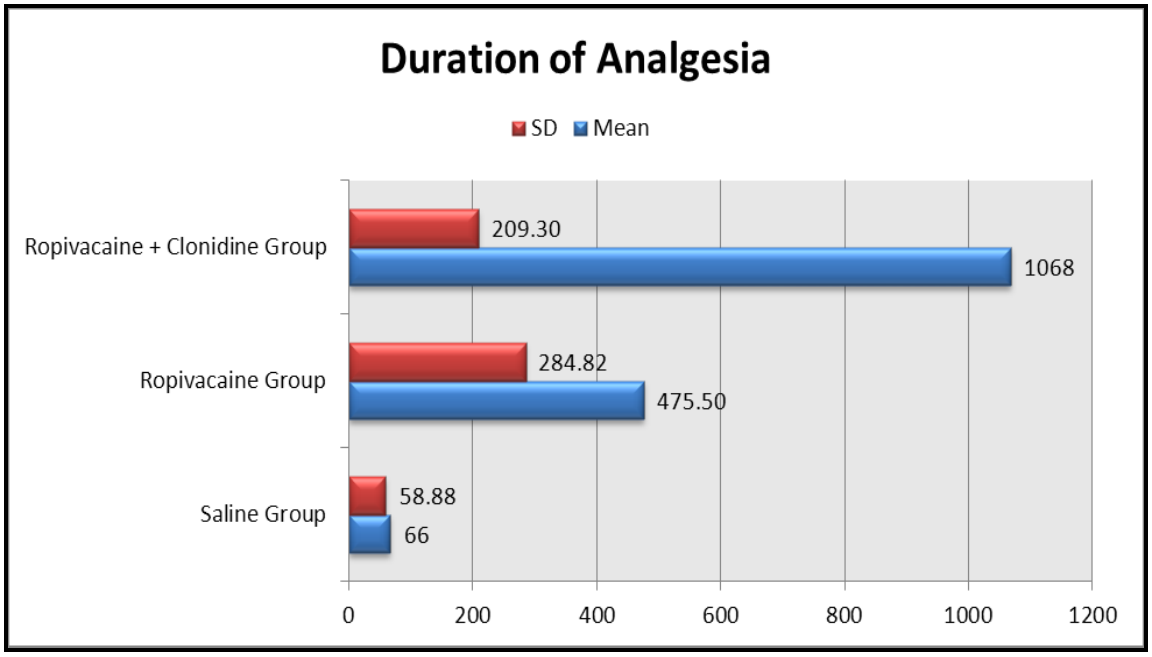
Total Fentanyl Dose	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
100 mcg	1	5.00	20	100.00	20	100.00
120 mcg	6	30.00	0	0.00	0	0.00
140 mcg	12	60.00	0	0.00	0	0.00
160 mcg	1	5.00	0	0.00	0	0.00
Total	20	100	20	100	20	100

Total Fentanyl Dose	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	133	100.00	100.00
SD	13.42	0.00	0.00
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		<0.0001
	Saline Group Vs Ropivacaine + Clonidine Group		<0.0001
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		>0.9999

The saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean total fentanyl dose of 133, 100 and 100 mcg respectively. By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and total fentanyl dose is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

DURATION OF ANALGESIA



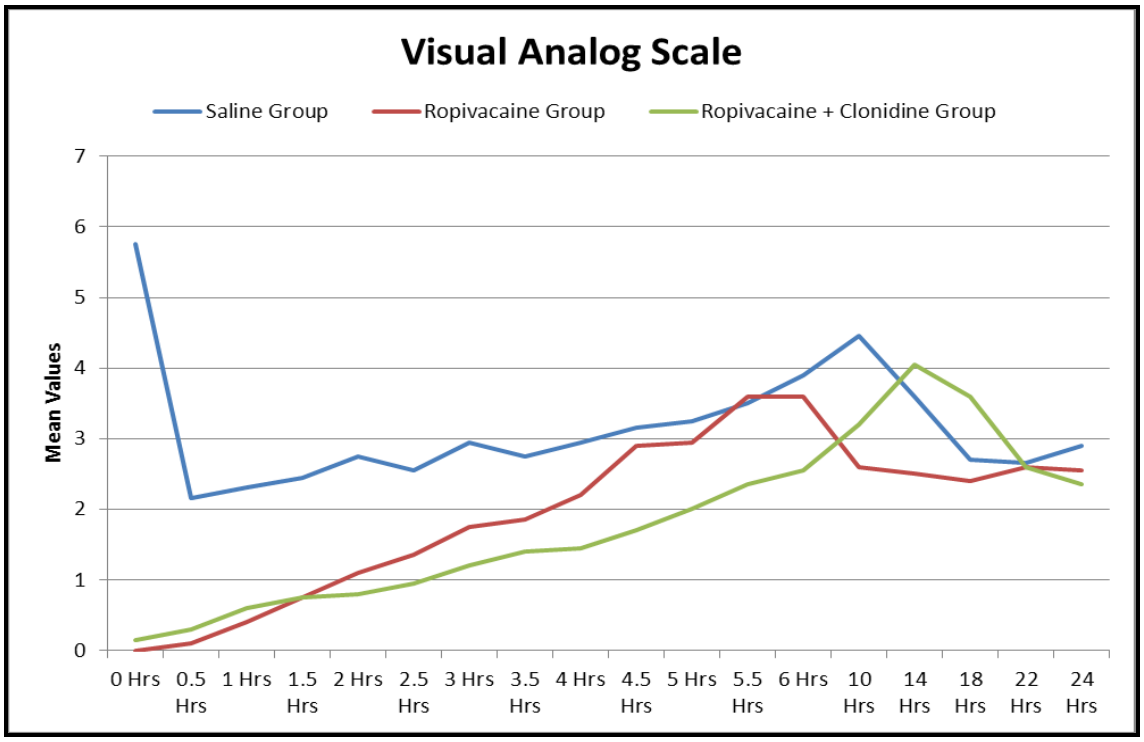


Duration of Analgesia	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
≤ 300 minutes	20	100.00	3	15.00	0	0.00
301-600 minutes	0	0.00	14	70.00	0	0.00
601-900 minutes	0	0.00	1	5.00	7	35.00
901-1200 minutes	0	0.00	1	5.00	8	40.00
1201-1500 minutes	0	0.00	1	5.00	5	25.00
Total	20	100	20	100	20	100

Duration of Analgesia	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	66	475.50	1068
SD	58.88	284.82	209.30
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		<0.0001
	Saline Group Vs Ropivacaine + Clonidine Group		<0.0001
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		<0.0001

The saline group, ropivacaine group and ropivacaine + clonidine group patients had duration of analgesia of 66, 475.50 and 1068 minutes respectively. By conventional criteria the association between the intervention groups (saline group vs ropivacaine group, saline group vs ropivacaine + clonidine and ropivacaine group vs ropivacaine + clonidine) and duration of analgesia is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

VISUAL ANALOG SCALE



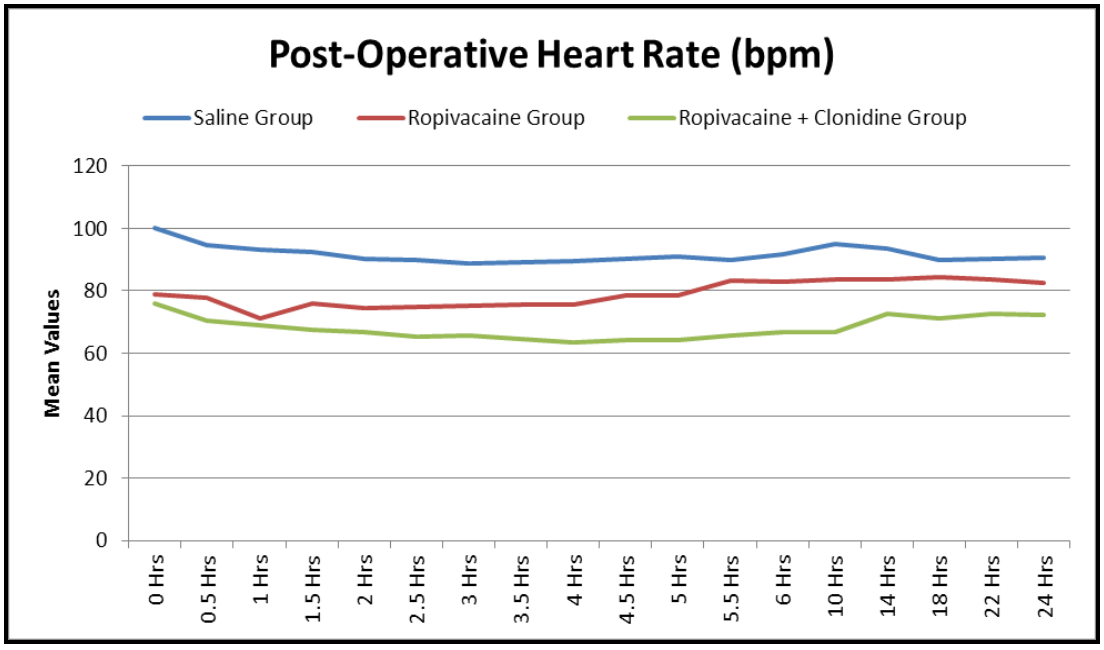
At 0 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean VAS score of 5.75, 0.00 and 0.15 respectively. Between saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean VAS score of 3.15, 1.96 and 1.78 respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and VAS score 0-24 hours is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (ropivacaine group vs ropivacaine + clonidine) and VAS score between 2-18 hours is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Visual Analog Scale	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
0 Hrs	5.75	1.97	0.00	0.00	0.15	0.37	<0.0001	<0.0001	0.0749
0.5 Hrs	2.15	0.99	0.10	0.31	0.30	0.47	<0.0001	<0.0001	0.1198
1 Hrs	2.30	1.08	0.40	0.50	0.60	0.50	<0.0001	<0.0001	0.2160
1.5 Hrs	2.45	1.10	0.75	0.55	0.75	0.44	<0.0001	<0.0001	1.0000
2 Hrs	2.75	1.29	1.10	0.45	0.80	0.41	<0.0001	<0.0001	0.0332
2.5 Hrs	2.55	0.89	1.35	0.59	0.95	0.51	<0.0001	<0.0001	0.0271
3 Hrs	2.95	1.05	1.75	0.72	1.20	0.62	0.0001	<0.0001	0.0131
3.5 Hrs	2.75	0.55	1.85	0.75	1.40	0.68	0.0001	<0.0001	0.0333
4 Hrs	2.95	0.51	2.20	0.83	1.45	0.76	0.0015	<0.0001	0.0051
4.5 Hrs	3.15	0.59	2.90	1.17	1.70	0.66	0.3969	<0.0001	0.0003
5 Hrs	3.25	0.64	2.95	1.00	2.00	0.65	0.2648	<0.0001	0.0010
5.5 Hrs	3.50	0.61	3.60	1.05	2.35	0.88	0.7136	<0.0001	0.0002
6 Hrs	3.90	0.31	3.60	1.47	2.55	0.76	0.3759	<0.0001	0.0071
10 Hrs	4.45	0.51	2.60	0.99	3.20	0.83	<0.0001	<0.0001	0.0455
14 Hrs	3.60	1.43	2.50	0.83	4.05	0.89	0.0050	0.2389	<0.0001
18 Hrs	2.70	0.92	2.40	0.82	3.60	1.39	0.2843	0.0209	0.0020
22 Hrs	2.65	0.49	2.60	0.75	2.60	1.19	0.8049	0.8627	1.0000
24 Hrs	2.90	0.31	2.55	0.76	2.35	0.93	0.0436	0.0167	0.4618

Post-Operative Heart Rate



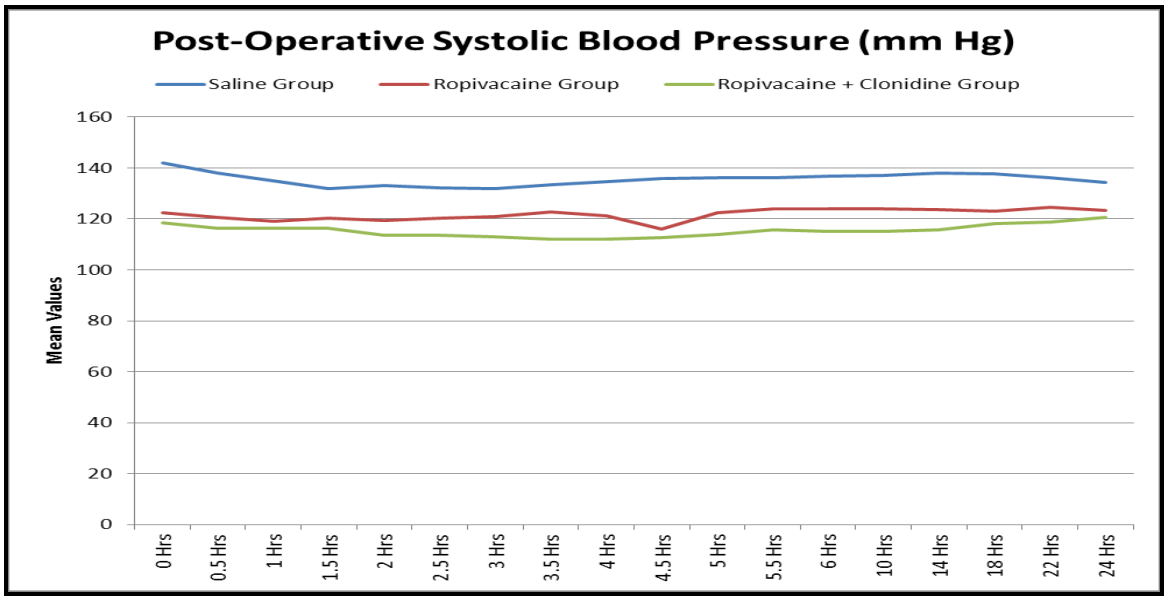
At 0 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative heart rate of 100.25, 78.95 and 76.15 bpm respectively. Between 0-24 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative heart rate of 91.71, 78.97 and 68.11 bpm respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and postoperative heart rate 0-24 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (ropivacaine group vs ropivacaine + clonidine) and postoperative heart rate between 0.5-24 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Post Operative Heart Rate (bpm)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
0 Hrs	100.25	10.39	78.95	7.37	76.15	6.89	<0.0001	<0.0001	0.2221
0.5 Hrs	94.60	9.63	77.95	5.52	70.60	6.79	<0.0001	<0.0001	0.0006
1 Hrs	93.35	8.10	71.25	16.14	68.95	7.58	<0.0001	<0.0001	0.5675
1.5 Hrs	92.30	6.84	76.00	5.30	67.65	8.88	<0.0001	<0.0001	0.0009
2 Hrs	90.30	6.54	74.65	4.93	66.90	9.36	<0.0001	<0.0001	0.0023
2.5 Hrs	89.90	4.92	75.00	6.16	65.30	8.66	<0.0001	<0.0001	0.0002
3 Hrs	88.95	4.77	75.20	5.48	65.85	8.74	<0.0001	<0.0001	0.0002
3.5 Hrs	89.15	5.25	75.65	6.16	64.55	6.60	<0.0001	<0.0001	<0.0001
4 Hrs	89.40	5.63	75.50	5.61	63.55	6.28	<0.0001	<0.0001	<0.0001
4.5 Hrs	90.15	6.16	78.70	7.71	64.15	5.82	<0.0001	<0.0001	<0.0001
5 Hrs	91.10	6.92	78.35	7.67	64.30	7.28	<0.0001	<0.0001	<0.0001
5.5 Hrs	89.80	5.29	83.30	10.09	65.85	7.65	0.0149	<0.0001	<0.0001
6 Hrs	91.85	5.52	83.00	12.86	66.70	6.36	0.0074	<0.0001	<0.0001
10 Hrs	95.10	6.88	83.75	12.77	66.75	4.10	0.0012	<0.0001	<0.0001
14 Hrs	93.60	7.23	83.50	8.66	72.50	7.57	0.0003	<0.0001	0.0001
18 Hrs	89.90	4.71	84.50	8.07	71.15	5.36	0.0137	<0.0001	<0.0001
22 Hrs	90.25	5.32	83.55	4.11	72.70	7.33	0.0001	<0.0001	<0.0001
24 Hrs	90.75	5.71	82.70	5.24	72.35	3.13	<0.0001	<0.0001	<0.0001

POST-OPERATIVE SYSTOLIC BLOOD PRESSURE



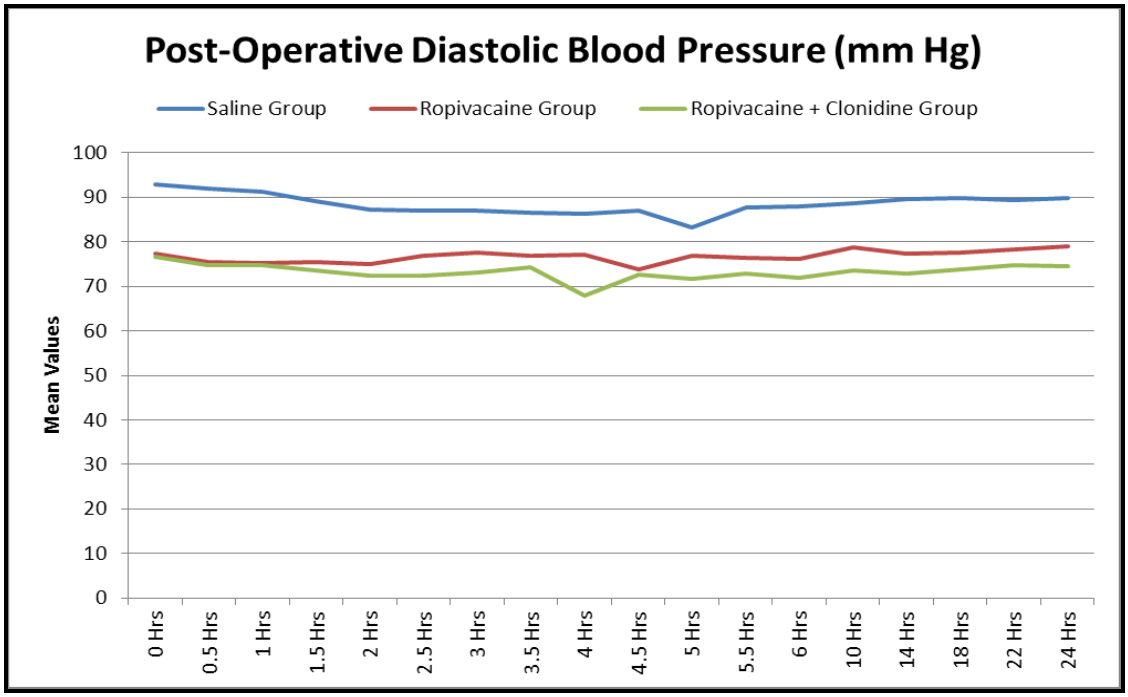
At 0 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative SBP of 141.95, 122.55 and 118.30 mm Hg respectively. Between 0-24 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative SBP of 135.56, 121.77 and 115.40 mm Hg respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and postoperative SBP 0-24 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (ropivacaine group vs ropivacaine + clonidine) and postoperative SBP between 2-22 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Post-Operative Systolic Blood Pressure (mm Hg)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
0 Hrs	141.95	8.08	122.55	7.04	118.30	10.56	<0.0001	<0.0001	0.1427
0.5 Hrs	137.95	7.37	120.50	5.55	116.30	7.94	<0.0001	<0.0001	0.0600
1 Hrs	134.80	9.06	119.20	4.72	116.45	8.37	<0.0001	<0.0001	0.2083
1.5 Hrs	132.00	7.90	120.40	6.40	116.25	9.21	<0.0001	<0.0001	0.1062
2 Hrs	133.20	8.21	119.40	5.64	113.65	10.23	<0.0001	<0.0001	0.0338
2.5 Hrs	132.15	8.36	120.25	4.95	113.60	7.57	<0.0001	<0.0001	0.0022
3 Hrs	131.90	8.95	120.95	3.53	113.00	8.95	<0.0001	<0.0001	0.0007
3.5 Hrs	133.30	9.64	122.80	6.03	111.95	8.23	0.0002	<0.0001	<0.0001
4 Hrs	134.65	9.86	121.20	5.68	112.05	8.11	<0.0001	<0.0001	0.0002
4.5 Hrs	135.75	8.71	115.90	23.57	112.65	6.96	0.0011	<0.0001	0.5578
5 Hrs	136.25	8.14	122.35	5.50	114.00	6.27	<0.0001	<0.0001	0.0001
5.5 Hrs	136.00	7.31	123.95	3.79	115.65	7.22	<0.0001	<0.0001	0.0001
6 Hrs	136.85	6.65	124.00	6.03	114.95	8.48	<0.0001	<0.0001	0.0004
10 Hrs	137.15	7.19	124.00	6.84	115.00	7.99	<0.0001	<0.0001	0.0005
14 Hrs	138.05	7.04	123.60	10.40	115.85	8.93	<0.0001	<0.0001	0.0158
18 Hrs	137.60	6.18	122.95	8.03	118.10	8.67	<0.0001	<0.0001	0.0344
22 Hrs	136.20	6.73	124.50	5.79	118.75	8.44	<0.0001	<0.0001	0.0164
24 Hrs	134.35	8.08	123.35	4.42	120.65	6.32	<0.0001	<0.0001	0.1256

Post-Operative Diastolic Blood Pressure



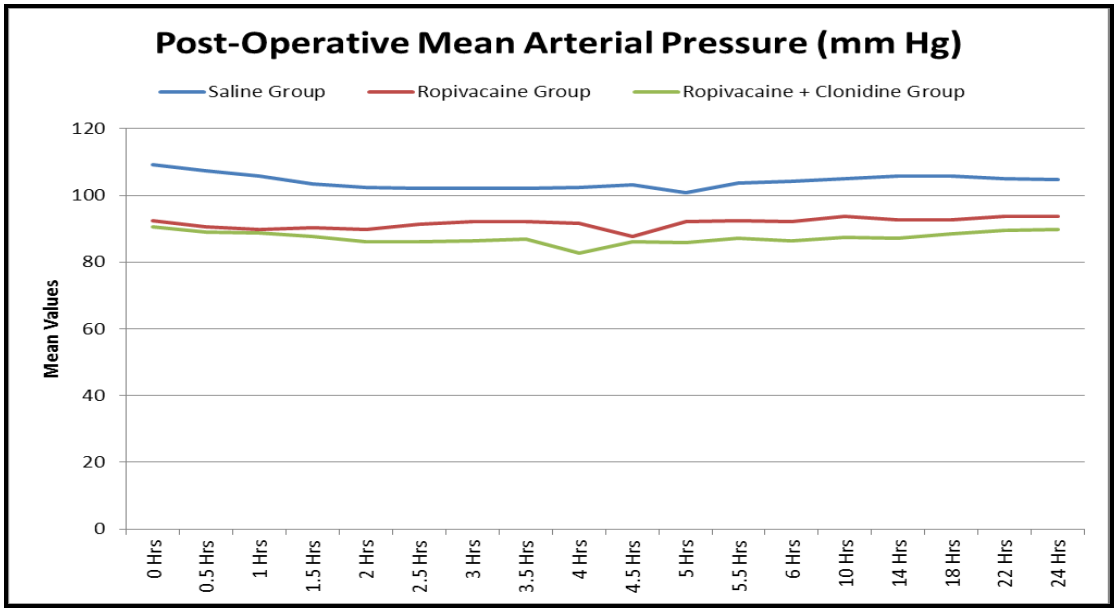
At 0 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative DBP of 93.00, 77.30 and 76.55 mm Hg respectively. Between 0-24 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative DBP of 88.44, 76.71 and 73.24 mm Hg respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and postoperative DBP 0-24 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (ropivacaine group vs ropivacaine + clonidine) and postoperative DBP between 2.5-24 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Post-Operative Diastolic Blood Pressure (mm Hg)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
0 Hrs	93.00	4.36	77.30	7.41	76.55	7.65	<0.0001	<0.0001	0.7544
0.5 Hrs	91.90	4.70	75.50	6.17	74.70	6.91	<0.0001	<0.0001	0.7014
1 Hrs	91.15	5.96	75.25	5.16	74.75	5.76	<0.0001	<0.0001	0.7740
1.5 Hrs	89.05	5.71	75.40	5.54	73.55	5.43	<0.0001	<0.0001	0.2930
2 Hrs	87.15	5.72	74.95	5.28	72.50	6.01	<0.0001	<0.0001	0.1788
2.5 Hrs	86.90	6.58	76.75	5.20	72.30	5.20	<0.0001	<0.0001	0.0102
3 Hrs	87.10	5.78	77.55	4.49	73.15	3.70	<0.0001	<0.0001	0.0017
3.5 Hrs	86.55	6.02	76.85	6.05	74.25	5.35	<0.0001	<0.0001	0.1583
4 Hrs	86.35	6.31	77.00	5.66	67.95	16.11	<0.0001	<0.0001	0.0229
4.5 Hrs	86.95	6.58	73.75	16.84	72.70	4.13	0.0023	<0.0001	0.7880
5 Hrs	83.25	19.40	76.85	5.91	71.80	5.19	0.0062	0.0149	0.0066
5.5 Hrs	87.65	6.28	76.50	5.92	72.90	4.83	<0.0001	<0.0001	0.0419
6 Hrs	87.90	6.47	76.15	5.34	72.00	4.65	<0.0001	<0.0001	0.0125
10 Hrs	88.75	5.58	78.65	6.82	73.60	4.89	<0.0001	<0.0001	0.0105
14 Hrs	89.50	5.38	77.30	7.40	72.75	4.74	<0.0001	<0.0001	0.0261
18 Hrs	89.75	4.51	77.65	8.16	73.80	5.95	<0.0001	<0.0001	0.0964
22 Hrs	89.25	6.00	78.30	6.17	74.75	5.68	<0.0001	<0.0001	0.0661
24 Hrs	89.75	5.21	79.05	5.64	74.40	4.91	<0.0001	<0.0001	0.0084

Post-Operative Mean Arterial Pressure



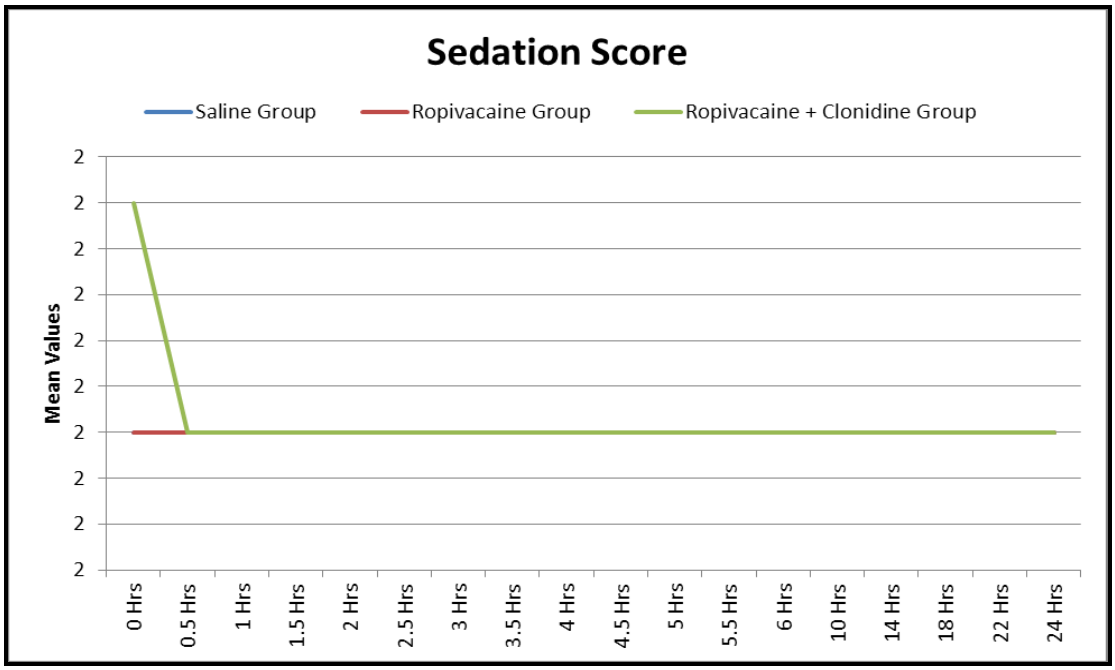
At 0 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative MAP of 109.32, 92.38 and 90.47 mm Hg respectively. Between 0-24 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean postoperative MAP of 104.15, 91.71 and 87.31 mm Hg respectively.

By conventional criteria the association between the intervention groups (saline group vs ropivacaine group and saline group vs ropivacaine + clonidine) and postoperative MAP 0-24 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

By conventional criteria the association between the intervention groups (ropivacaine group vs ropivacaine + clonidine) and postoperative MAP between 2-24 hours postoperatively is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Post-Operative Mean Arterial Pressure (mm Hg)	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
0 Hrs	109.32	4.52	92.38	5.81	90.47	7.85	<0.0001	<0.0001	0.3856
0.5 Hrs	107.25	3.33	90.50	4.49	88.88	6.43	<0.0001	<0.0001	0.3625
1 Hrs	105.70	5.07	89.90	3.74	88.65	5.34	<0.0001	<0.0001	0.3965
1.5 Hrs	103.37	5.54	90.40	4.09	87.78	5.71	<0.0001	<0.0001	0.1038
2 Hrs	102.50	5.78	89.77	3.54	86.22	6.81	<0.0001	<0.0001	0.0455
2.5 Hrs	101.98	6.16	91.25	3.44	86.07	5.09	<0.0001	<0.0001	0.0005
3 Hrs	102.03	5.76	92.02	3.30	86.43	4.71	<0.0001	<0.0001	0.0001
3.5 Hrs	102.13	5.59	92.17	5.22	86.82	5.52	<0.0001	<0.0001	0.0032
4 Hrs	102.45	5.87	91.73	4.21	82.65	11.47	<0.0001	<0.0001	0.0020
4.5 Hrs	103.22	6.06	87.80	13.38	86.02	3.57	<0.0001	<0.0001	0.5682
5 Hrs	100.92	13.38	92.02	4.85	85.87	4.76	0.0080	<0.0001	0.0002
5.5 Hrs	103.77	5.68	92.32	4.31	87.15	4.30	<0.0001	<0.0001	0.0005
6 Hrs	104.22	5.41	92.10	4.67	86.32	4.64	<0.0001	<0.0001	0.0004
10 Hrs	104.88	4.78	93.77	6.45	87.40	4.66	<0.0001	<0.0001	0.0010
14 Hrs	105.68	5.09	92.73	8.01	87.12	5.11	<0.0001	<0.0001	0.0119
18 Hrs	105.70	4.09	92.75	7.76	88.57	5.83	<0.0001	<0.0001	0.0615
22 Hrs	104.90	5.51	93.70	5.35	89.42	5.91	<0.0001	<0.0001	0.0213
24 Hrs	104.62	5.46	93.82	4.74	89.82	4.95	<0.0001	<0.0001	0.0128

Sedation Score

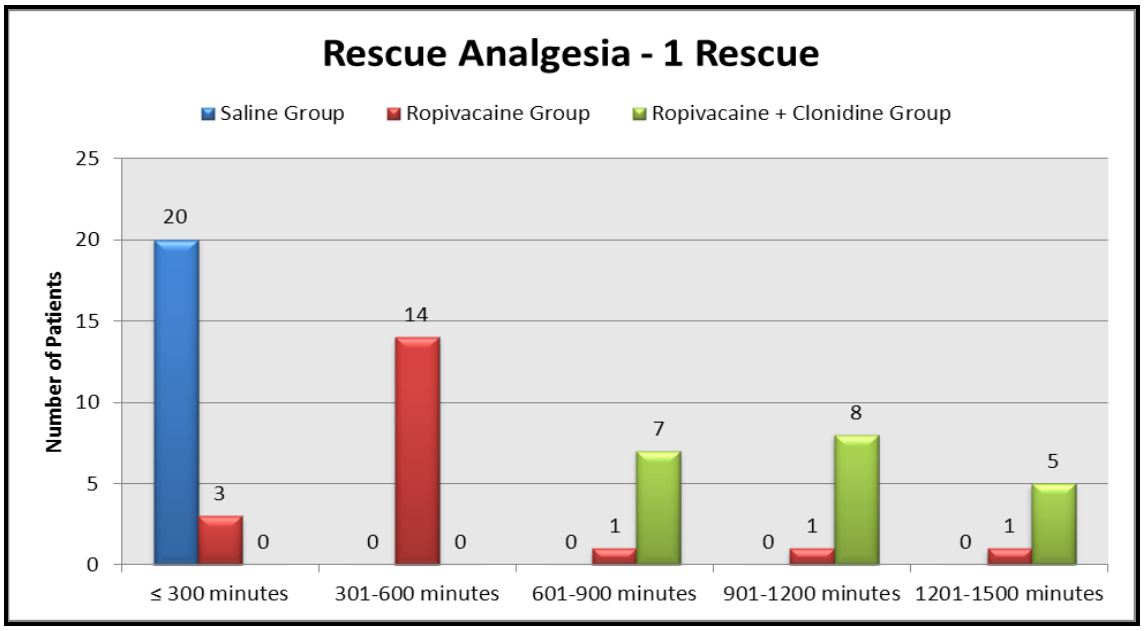


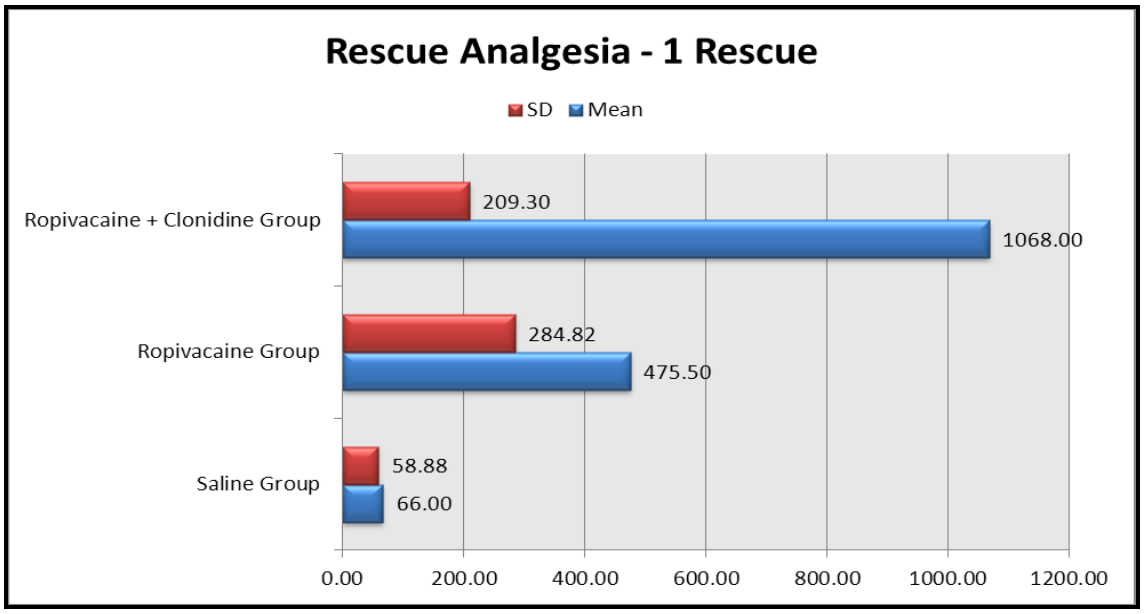
At 0 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean sedation score of 2.00, 2.00 and 2.05 points respectively. Between 0-24 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean sedation score of 2.00, 2.00 and 2.00 points respectively.

By conventional criteria the association between the intervention groups and sedation score 0-24 hours postoperatively is considered to be statistically not significant since $p > 0.05$ as per unpaired t test.

Sedation Score	Saline Group		Ropivacaine Group		Ropivacaine + Clonidine Group		P Value Unpaired t Test		
	Mean	SD	Mean	SD	Mean	SD	Saline Group Vs Ropivacaine Group	Saline Group Vs Ropivacaine + Clonidine Group	Ropivacaine Group Vs Ropivacaine + Clonidine Group
0 Hrs	2.00	0.00	2.00	0.00	2.05	0.22	>0.9999	0.3236	0.3236
0.5 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
1 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
1.5 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
2 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
2.5 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
3 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
3.5 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
4 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
4.5 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
5 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
5.5 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
6 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
10 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
14 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
18 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
22 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999
24 Hrs	2.00	0.00	2.00	0.00	2.00	0.00	>0.9999	>0.9999	>0.9999

RESCUE ANALGESIA - 1 RESCUE



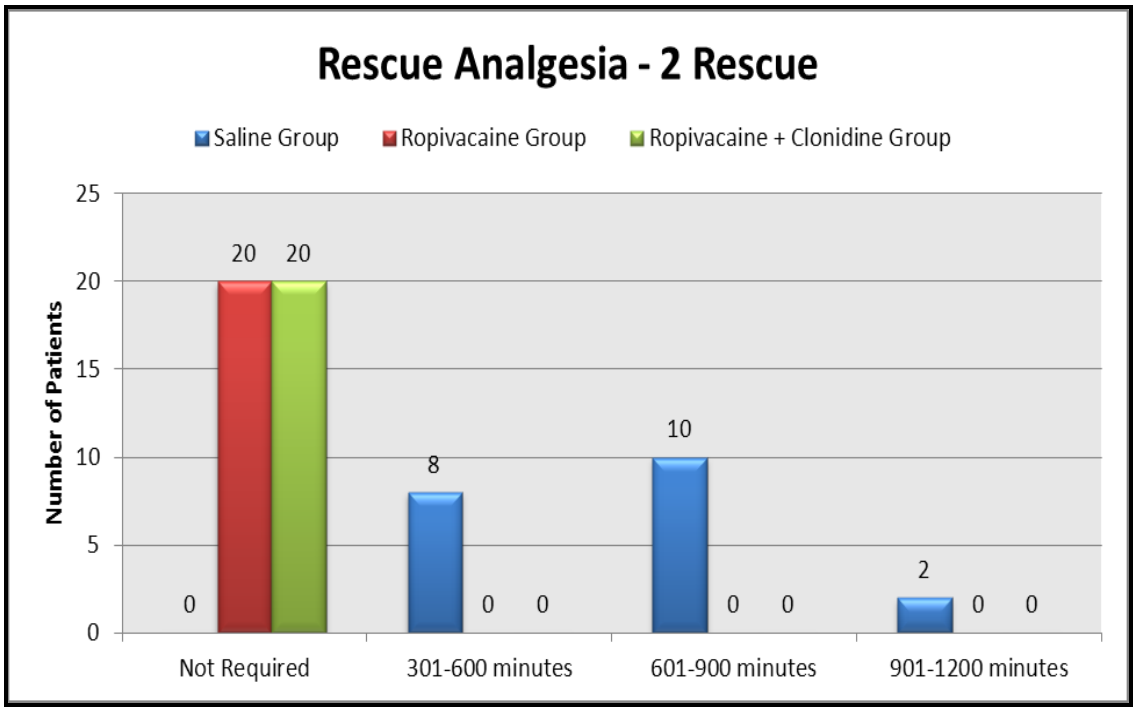


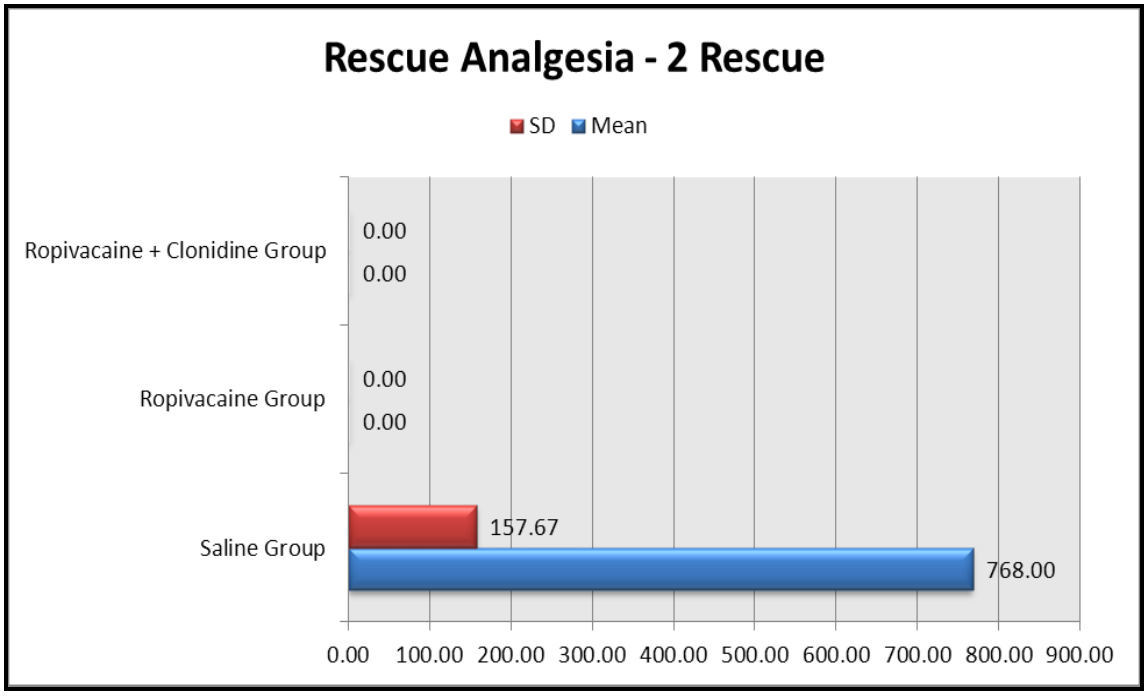
The saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean first rescue analgesia time of 66.00, 475.50 and 1068 minutes respectively. By conventional criteria the association between the intervention groups and first rescue analgesia time is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

Rescue Analgesia - 1 Rescue	**Saline Group**	**%**	**Ropivacaine Group**	**%**	**Ropivacaine + Clonidine Group**	**%**
≤ 300 minutes	20	100.00	3	15.00	0	0.00
301-600 minutes	0	0.00	14	70.00	0	0.00
601-900 minutes	0	0.00	1	5.00	7	35.00
901-1200 minutes	0	0.00	1	5.00	8	40.00
1201-1500 minutes	0	0.00	1	5.00	5	25.00
Total	20	100	20	100	20	100

Rescue Analgesia - 1 Rescue	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	66.00	475.50	1068.00
SD	58.88	284.82	209.30
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		<0.0001
	Saline Group Vs Ropivacaine + Clonidine Group		<0.0001
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		<0.0001

Rescue Analgesia - 2 Rescue



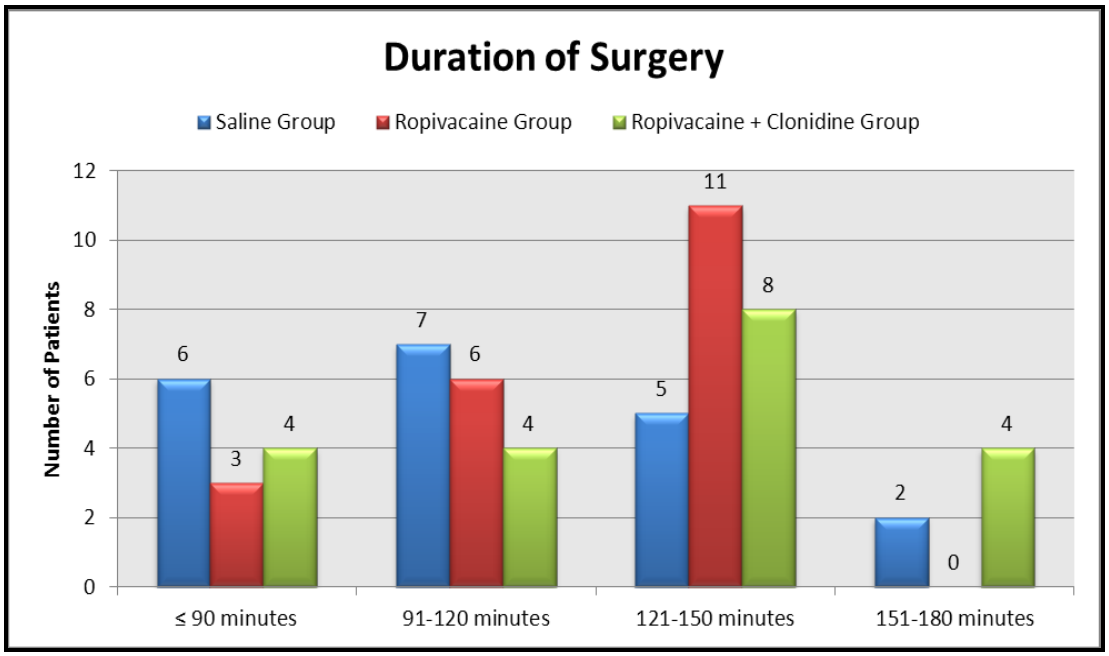


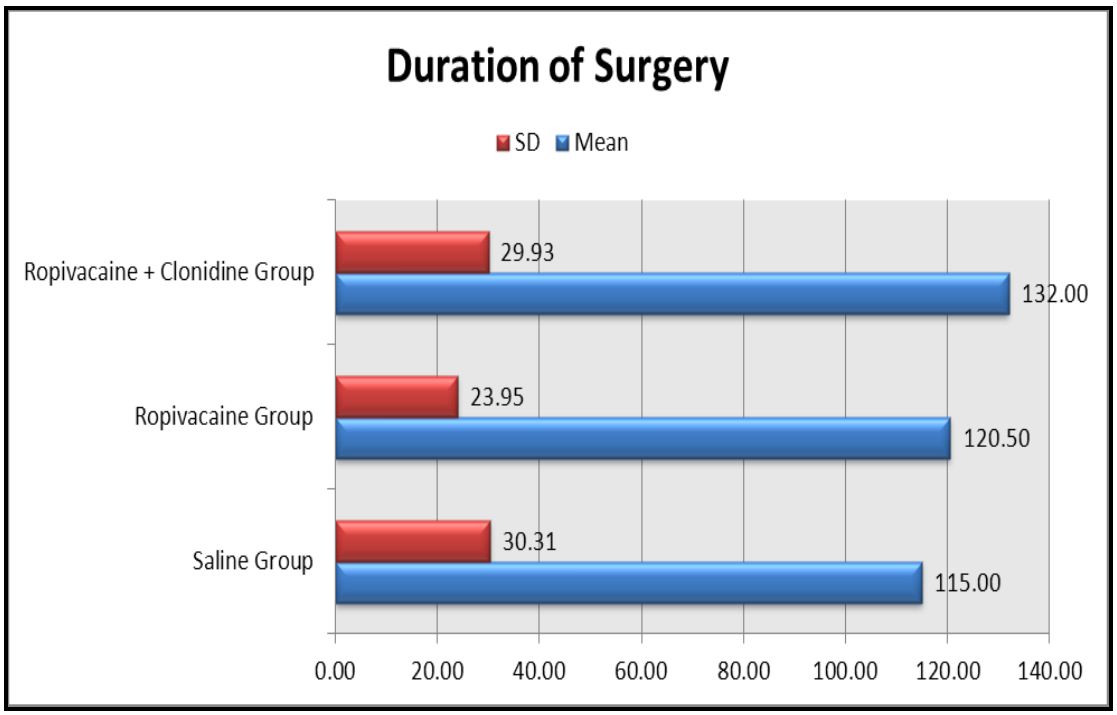
Rescue Analgesia - 2 Rescue	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
Not Required	0	0.00	20	100.00	20	100.00
301-600 minutes	8	40.00	0	0.00	0	0.00
601-900 minutes	10	50.00	0	0.00	0	0.00
901-1200 minutes	2	10.00	0	0.00	0	0.00
1201-1500 minutes	0	0.00	0	0.00	0	0.00
Total	20	100	20	100	20	100

Rescue Analgesia - 2 Rescue	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	768.00	0.00	0.00
SD	157.67	0.00	0.00
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		<0.0001
	Saline Group Vs Ropivacaine + Clonidine Group		<0.0001
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		>0.9999

The saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean second rescue analgesia time of 768.00, 0.00 and 0.00 minutes respectively. By conventional criteria the association between the intervention groups and second rescue analgesia time is considered to be statistically significant since $p < 0.05$ as per unpaired t test.

DURATION OF SURGERY



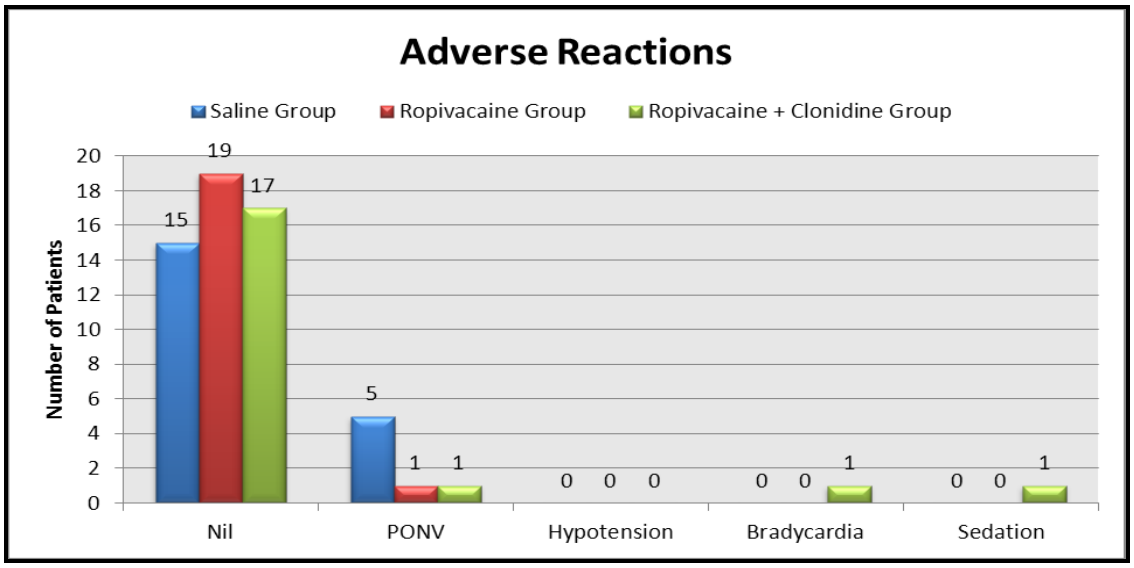


Duration of Surgery	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
≤ 90 minutes	6	30.00	3	15.00	4	20.00
91-120 minutes	7	35.00	6	30.00	4	20.00
121-150 minutes	5	25.00	11	55.00	8	40.00
151-180 minutes	2	10.00	0	0.00	4	20.00
Total	20	100	20	100	20	100

Duration of Surgery	Saline Group	Ropivacaine Group	Ropivacaine + Clonidine Group
Mean	115.00	120.50	132.00
SD	30.31	23.95	29.93
P Value Unpaired t Test	Saline Group Vs Ropivacaine Group		0.5281
	Saline Group Vs Ropivacaine + Clonidine Group		0.0823
	Ropivacaine Group Vs Ropivacaine + Clonidine Group		0.1876

The saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean duration of surgery of 115.00, 120.50 and 132.00 minutes respectively. By conventional criteria the association between the intervention groups and duration of surgery is considered to be statistically not significant since $p > 0.05$ as per unpaired t test.

ADVERSE REACTIONS



Adverse Reactions	Saline Group	%	Ropivacaine Group	%	Ropivacaine + Clonidine Group	%
Nil	15	75.00	19	95.00	17	85.00
PONV	5	25.00	1	5.00	1	5.00
Hypotension	0	0.00	0	0.00	0	0.00
Bradycardia	0	0.00	0	0.00	1	5.00
Sedation	0	0.00	0	0.00	1	5.00
Total	20	100	20	100	20	100
P Value Fishers Exact Test			Saline Group Vs Ropivacaine Group			0.1010
			Saline Group Vs Ropivacaine + Clonidine Group			0.9246
			Ropivacaine Group Vs Ropivacaine + Clonidine Group			0.3558

The saline group, ropivacaine group and ropivacaine + clonidine group patients had incidence of adverse reactions of 25%, 5% and 15% respectively. By conventional criteria the association between the intervention groups and adverse reactions status is considered to be statistically not significant since $p > 0.05$ as per unpaired t test.

DISCUSSION

DURATION OF ANALGESIA

Saline group vs Ropivacaine Group

The mean duration of analgesia was significantly more in ropivacaine group compared to saline group by a mean difference of 409.50 minutes (7.20 times or 86% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

The mean duration of analgesia was significantly more in ropivacaine + clonidine group compared to saline group by a mean difference of 1002 minutes (16.18 times or 34% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t test.

The mean duration of analgesia was significantly more in ropivacaine + clonidine group compared to ropivacaine group by a mean difference of 592.50 minutes (2.25 times or 55% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t test.

In the study by **Aunac S, Carlier M** , there is reduction in analgesic requirements with combined superficial deep cervical plexus block after general anaesthesia with 0.5 % ropivacaine and 0.5% ropivacaine and clonidine. Additional fentanyl boluses were reduced during surgery in group 2

and 3 . Post operatve analgesic requirements were also reduced in group 2 and 3 . This correlates with the finding in our study .

Susmita Chakraborty et al studied the effect of clonidine in bupivacaine induced supra clavicular block . They concluded that clonidine significantly prolonged the analgesic duration without any important side effects other than sedation.

In our study also the addition of clonidine significantly prolonged the duration of analgesia 1002 minutes when compared to saline group 66 minutes.

In **Herbland and colleagues** study , BSCPB by two point injection with ropivacaine 0.75 % without any adjuvents was done . The post operative block recedes rapidly even though the analgesia lasts longer than control group.

In our study since we used clonidine as an adjuvant the duration of analgesia lasts longer than group B and control group even though we used 0.2 % ropivacaine .

PAIN SCORE

VAS score

Saline group vs Ropivacaine Group

The mean VAS score between 0-24 hours was significantly more in saline group compared to ropivacaine group by a mean difference of

1.19 points (1.61 times or 38% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean VAS score between 0-24 hours was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 1.37 points (1.77 times or 44% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Ropivacaine Group vs Ropivacaine + Clonidine group

The mean VAS score between 2-18 hours was significantly more in ropivacaine group compared to ropivacaine + clonidine group by a mean difference of 0.18 points (1.10 times or 9% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

At 0 hours, saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean VAS score of 5.75, 0.00 and 0.15 respectively. Between saline group, ropivacaine group and ropivacaine + clonidine group patients had a mean VAS scoreof 3.15, 1.96 and 1.78 respectively.

In a study by **Andrieu et al** , at the time of entry in PACU , the pain scores were 5 for saline , 3 for ropivacaine group , 3 for ropivacaine and clonidine group.Pain scores reduced in all 3 groups during first day after surgery.

Our study results are consistant with this results.

In **Hasim Negmi MD** , et al study patients given BSCPB had significantly lower VAS score than control group .

This is also comparable with our study.

In **Isaak Kesisoglou , MD , PhD , et al** study 100 patients who undergone total thyroidectomy were evaluated the effects of BSCPB done with 0.75 % ropivacaine . Paracoxibwas administered immediate post operatively and 12 hours later and monitored for 24 hours .They concluded that BSCPB has a major analgesic effect after total thyroidectomy .

In our study also there was significant reduction in pain scores in patients for whom bilateral combined superficial and deep cervical plexus block was done .

RESCUE ANALGESIA

First rescue analgesia

The mean first rescue analgesia time was significantly more in ropivacaine group compared to saline group by a mean difference of 409.50 minutes (7.20 times or 86% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

The mean first rescue analgesia time was significantly more in ropivacaine + clonidine group compared to saline group by a mean difference

of 1002.00 minutes (16.18 times or 94% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

The mean first rescue analgesia time was significantly more in ropivacaine + clonidine group compared to ropivacaine group by a mean difference of 592.50 minutes (2.25 times or 55% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Second rescue analgesia

The mean second rescue analgesia time was significantly more in saline group compared to ropivacaine group and ropivacaine + clonidine group by a mean difference of 768.00 minutes. There was no need for second rescue analgesia in ropivacaine group and ropivacaine + clonidine group. This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

In **Hisham Negmi MD,et al ,** study morphine use in PACU is significantly higher in control group than in BSCPBs group. 18 patients received morphine in control group compared to 6 patients in BSCPBs group.

This is comparable to our study .

HEMODYNAMIC STABILITY

Systolic blood pressure

Saline group vs Ropivacaine Group

The mean intraoperative SBP between intubation and extubation was significantly more in saline group compared to ropivacaine group by a mean difference of 12.43 mm Hg (1.1 times or 9% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean intraoperative SBP between intubation and extubation was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 14.81 mm Hg (1.13 times or 11% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Ropivacaine Group vs Ropivacaine + Clonidine group

The mean intraoperative SBP between intubation and extubation was significantly more in ropivacaine group compared to ropivacaine + clonidine group by a mean difference of 5.18 mm Hg (1.05 times or 4% increase). This difference is significant with a lowest p-value of 0.0032 as per unpaired t-test

Intraoperative DBP

Saline group vs Ropivacaine Group

The mean intraoperative DBP between intubation and extubation was significantly more in saline group compared to ropivacaine group by a mean difference of 9.58 mm Hg (1.12 times or 11% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean intraoperative DBP between incision and extubation was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 10.11 mm Hg (1.13 times or 12% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Intraoperative MAP

Saline group vs Ropivacaine Group

The mean intraoperative MAP between intubation and extubation was significantly more in saline group compared to ropivacaine group by a mean difference of 11.25 mm Hg (1.12 times or 11% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean intraoperative MAP between incision and extubation was significantly more in saline group compared to ropivacaine +

clonidine group by a mean difference of 12.36 mm Hg (1.14 times or 12% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Intraoperative heart rate

Saline group vs Ropivacaine Group

The mean intraoperative heart rate between intubation and extubation was significantly more in saline group compared to ropivacaine group by a mean difference of 12.43 bpm (1.13 times or 12% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean intraoperative heart rate between intubation and extubation was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 15.56 bpm (1.21 times or 17% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Ropivacaine Group vs Ropivacaine + Clonidine group

The mean intraoperative heart rate between30 minutes and end of procedure was significantly more in ropivacaine group compared to ropivacaine + clonidine group by a mean difference of 6.22 bpm (1.09 times or 8% increase). This difference is significant with a lowest p-value of 0.0005 as per unpaired t-test

Postoperative heart rate

Saline group vs Ropivacaine Group

The mean postoperative heart rate between 0-24 hours was significantly more in saline group compared to ropivacaine group by a mean difference of 12.73 bpm (1.16 times or 14% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean postoperative heart rate between 0-24 hours was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 23.60 bpm (1.35 times or 26% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Ropivacaine Group vs Ropivacaine + Clonidine group

The mean postoperative heart rate between 0.5-24 hours was significantly more in ropivacaine group compared to ropivacaine + clonidine group by a mean difference of 10.86 bpm (1.16 times or 14% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Postoperative SBP

Saline group vs Ropivacaine Group

The mean postoperative SBP between 0-24 hours was significantly more in saline group compared to ropivacaine group by a mean difference of 13.79 mm Hg (1.11 times or 10% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean postoperative SBP between 0-24 hours was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 20.16 mm Hg (1.17 times or 15% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Ropivacaine Group vs Ropivacaine + Clonidine group

The mean postoperative SBP between 2-22 hours was significantly more in ropivacaine group compared to ropivacaine + clonidine group by a mean difference of 6.37 mm Hg (1.06 times or 5% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Postoperative DBP

Saline group vs Ropivacaine Group

The mean postoperative DBP between 0-24 hours was significantly more in saline group compared to ropivacaine group by a mean difference of 11.73 mm Hg (1.15 times or 13% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean postoperative DBP between 0-24 hours was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 15.19 mm Hg (1.21 times or 17% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Ropivacaine Group vs Ropivacaine + Clonidine group

The mean postoperative DBP between 2.5-24 hours was significantly more in ropivacaine group compared to ropivacaine + clonidine group by a mean difference of 3.46 mm Hg (1.05 times or 5% increase). This difference is significant with a lowest p-value of 0.0017 as per unpaired t-test

Postoperative MAP

Saline group vs Ropivacaine Group

The mean postoperative MAP between 0-24 hours was significantly more in saline group compared to ropivacaine group by a mean difference of 12.42 mm Hg (1.14 times or 12% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

Saline group vs Ropivacaine + Clonidine group

The mean postoperative MAP between 0-24 hours was significantly more in saline group compared to ropivacaine + clonidine group by a mean difference of 16.83 mm Hg (1.19 times or 16% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test

Ropivacaine Group vs Ropivacaine + Clonidine group

The mean postoperative MAP between 2-24 hours was significantly more in ropivacaine group compared to ropivacaine + clonidine group by a mean difference of 4.42 mm Hg (1.05 times or 5% increase). This difference is significant with a lowest p-value of 0.0001 as per unpaired t-test

Vital signs remained stable throughout the intra operative and post operative period .this confirms the clonidine's effect in providing hemodynamic stability .Even though a slight decrease in heart rate and

blood pressure was noted , it never fell down to more than 20 % of baseline values .

G.Andrieu et al showed that systolic blood pressure was significantly lower in ropivacaine plus clonidine group than ropivacaine only group .

This is comparable to the results in our study.

TOTAL FENTANYL DOSE

The mean total fentanyl dose was significantly more in saline group compared to ropivacaine group and ropivacaine + clonidine group by a mean difference of 33 mcg (1.33 times or 25% increase). This difference is significant with a lowest p-value of <0.0001 as per unpaired t-test.

In **Andrieu et al** , study where BSCPBs were performed the intra operative total fentanyl dose reduced in group RC and group R compared with group Saline.

This is comparable to the results in our study .

Rita Pal et al studied the duration of post operative analgesia in total thyroidectomy patients with BSCPBs with bupivacaine and clonidine . Duration of analgesia is significantly more in bupivacaine plus clonidine group than bupivacaine group .Total fentanyl use in post

operative period is also significantly less in bupivacaine plus clonidine group .

In our study the total intra operative fentanyl consumption is significantly more in control group than the ropivacaine group and ropivacaine plus clonidine group .

ADVERSE EFFECTS

The saline group, ropivacaine group and ropivacaine + clonidine group patients had incidence of adverse reactions of 25%, 5% and 15% respectively. By conventional criteria the association between the intervention groups and adverse reactions status is considered to be statistically not significant since $p > 0.05$ as per unpaired t test.

In **Sophie Aunac et al** study 3 patients in control group and each one patient in ropivacaine group and ropivacaine plus clonidine group had nausea and vomiting which is not statistically significant.

This is consistant with our study results .

SUMMARY

DURATION OF ANALGESIA

With bilateral superficial and deep cervical plexus block in patients undergoing thyroid surgeries under general anaesthesia, ropivacaine alone and ropivacaine + clonidine combination resulted in significantly increased duration of analgesia compared to saline alone. In addition ropivacaine + clonidine combination resulted in extended duration of analgesia compared to ropivacaine alone.

VAS SCORE

The mean VAS score was less in ropivacaine group than control group.the mean VAS score was still lesser in ropivacaine plus clonidine group

RESCUE ANALGESIA

Ropivacaine alone and ropivacaine + clonidine combination resulted in significantly delayed need for first rescue analgesia compared to saline alone. In addition ropivacaine + clonidine combination resulted in more significantly delayed need for first rescue analgesia compared to ropivacaine alone.

ropivacaine alone and ropivacaine + clonidine comination resulted in significantly no need for second rescue analgesia compared to saline alone.

FENTANYL DOSAGE

There was significant reduction in intra operative fentanyl dosage in ropivacaine group and ropivacaine plus clonidine group than the control group .

HAEMODYNAMIC STABILITY

Vital parameters like systolic blood pressure , diastolic blood pressure , heart rate were reduced in both ropivacaine group and ropivacaine plus clonidine group than the control group but are with in the normal range and within 20% of the baseline value .

ADVERSE EFFECTS

There is no significant difference in the incidence of advese effects between ropivacaine group and ropivacaine plus clonidine group and saline group .

CONCLUSION

Our study has shown a better post operative analgesia with Bilateral combined superficial and deep cervical plexus block with ropivacaine (0.2%)and clonidine(2 mcg/kg) than in patients with ropivacaine (0.2%)alone, in patients undergoing total thyroidectomy.

In this study we also found a reduced intra operative opioid requirement, post operative rescue analgesia requirement and lower VAS score without any significant increase in adverse effect .

So we conclude that bilateral superficial and deep cervical plexus block with ropivacaine & clonidine is an effective and useful method to manage post operative pain in total thyroidectomy patients .

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ABBREVIATIONS

BSCPB	:	Bilateral superficial cervical plexus block.
PACU	:	Post anaesthetic care unit.
SBP	:	Systolic blood pressure.
DBP	:	Diastolic blood pressure.
MAP	:	Mean arterial pressure.
HR	:	Heart rate.
ASA	:	American society of anaesthesiologist.
BSADCPB	:	Bilateral superficial and deep cervical plexus block.

PROFORMA

DATE: ROLL NO: AIRWAY DEVICE:

NAME:

AGE: SEX: IP NO:

DIAGNOSIS:

SURGICAL PROCEDURE DONE:

Ht: CVS: HB:

Wt: RS:

AIRWAY:MMC - IID - DENTITION -

PRE OP ASSESSMENT:

HISTORY: Any Co-morbid illness

H/O Documented Difficult Airway

H/O previous surgeries

MEASURES OF STUDY OUTCOME:

INTUBATION RESPONSE:

Premedication:

induction:

Intubation:

Maintanance:

Positioning;

B/L superficial and deep cervical plexus block: Drugs

COMPLICATIONS IN INTRA OPERATIVE PERIOD: COMPLICATIONS POST EXTUBATION:

Hemodynamics: intra operative

Events	Time	Systolic BP (mmHg)	Diastolic BP (mmHg)	MAP	Heart rate Beats/min	SPO2
Baseline						
Induction						
Incision						
End of procedure						
Extubation						

TIME(MIN)	0	5	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180
HR																	
SBP																	
DBP																	
MAP																	
SPO2																	
ATRACURIUM																	
FENTANYL																	

POST OPERATIVE

TIME(hrs)	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	10	14	18	22	24
VAS																		
HR																		
SBP																		
DBP																		
MAP																		
SEDATION SCORE																		
Resque analgesia																		

INFORMATION TO PARTICIPENTS

Investigator : Dr. RAMANIKANTH.S

Name of the Participant:

Title. "Bilateral superficial and deep cervical plexus block using Ropivacaine & Clonidine for Thyroid surgeries under general Anaesthesia".
(A Prospective, randomized, double blinded , placebo controlled study for evaluating the analgesic efficacy of (0.2%)Ropivacaine Vs(0.2%) Ropivacaine & Clonidine)

You are invited to take part in this research study. We have got approval from the IEC. You are asked to participate because you satisfy the eligibility criteria. We want to compare and study the safety and post operative analgesic efficacy of ropivacaine(0.2%)and ropivacaine (0.2%) with clonidine (2mcg/kg)in bilateral superficial and deep cervical plexus block after general anaesthesia for thyroid surgeries .

What is the Purpose of the Research:

For Thyroid surgeries, superficial and deep cervical plexus block performed using ultrasound after general anaesthesia to study

1. To evaluate the duration of post operative analgesic efficacy of these drugs.
2. To assess Intraoperative and post operative haemodynamics
3. Post operative visual analogue scale pain score.
4. Complication rate.
5. To evaluate intra operative opioids dosage

The Study Design:

All the patients in the study will be divided into three groups.

Group1- pre operative superficial and deep cervical plexus block using ultrasound technique after general anaesthesia using normal saline

Group 2- pre operative superficial and deep cervical plexus block using ultrasound technique after general anaesthesia using ropivacaine (0.2%).

Group 3- pre operative superficial and deep cervical plexus block using ultrasound technique after general anaesthesia using ropivacaine (0.2%) and clonidine (2mcg/kg).

Benefits

Superficial and deep cervical plexus block improves intra operative hemodynamic, reduces opioid requirement, causes post operative pain relief.

Discomforts and risks

Intravascular local anaesthetic injection

Damage to neuro vascular structure

This intervention has been shown to be well tolerated as shown by previous studies. And if you do not want to participate you will have alternative of setting the standard treatment and your safety is our prime concern.

Time :
Date :
Place :

Signature / Thumb Impression of Patient
Patient Name:

Signature of the Investigator : _____

Name of the Investigator : _____

PATIENT CONSENT FORM

Study title **"Bilateral superficial and deep cervical plexus block using Ropivacaine & Clonidine for Thyroid surgeries under general Anaesthesia**".
(A Prospective, randomized, double blinded , placebo controlled study for evaluating the analgesic efficacy of (0.2%)Ropivacaine Vs(0.2%) Ropivacaine & Clonidine)

Study center: **INSTITUTE OF ANAESTHESIOLOGY AND CRITICAL CARE,**

RAJIV GANDHI GOVT. GENERAL HOSPITAL,

MADRAS MEDICAL COLLEGE,

CHENNAI-0 3.

Participant name: Age: Sex: I.P.No:

I confirm that I have understood the purpose of procedure for the above study. I have the opportunity to ask the question and all my questions and doubts have been answered to my satisfaction.

I have been explained about the pitfall in the procedure. I have been explained about the safety, advantage and disadvantage of the technique.

I understand that my participation in the study is voluntary and that I am free to withdraw at anytime without giving any reason.

I understand that investigator, regulatory authorities and the ethics committee will not need my permission to look at my health records both in respect to current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from the study.

Time:

Date: Signature / thumb impression of patient

<u>ஆராய்ச்சி ஒப்புதல் படிவம்</u>

ஆராயச்சியின் தலைப்பு

தைராய்டு சுரப்பி அறுவை சிகிச்சைக்கு முழு மயக்கம் கொடுத்த பின்பு கழுத்தின் இருபுறமும் மேலோட்டமான மற்றும் உள் நரம்பு பின்னல் பகுதியில் ரோபிவெகெய்ன் (அ) ரோபிவெகெய்ன் மற்றும் குளோனிடின் மருந்து கலவை செலுத்தி மரத்துப்போகும் தன்மை அடிப்படையில் ஒப்பிடுதல்

ஆய்வு நிலையம் : மயக்கவியல் துறை, சென்னை மருத்துவக் கல்லூரி சென்னை – 3.

பங்கு பெறுவரின் பெயர் :

பங்குபெறுபவரின் எண் :

பங்குபெறுபவர் இதனை (✓) குறிக்கவும்

மேலே குறிப்பிட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது. என்னுடைய சந்தேகங்களை கேட்கவும், அதற்கான தகுந்த விளக்கங்களை பெறவும் வாய்ப்பளிக்கப்பட்டது. ☐

நான் இவ்வாய்வில் தன்னிச்சையாகதான் பங்கேற்கிறேன். எந்த காரணத்தினாலோ எந்த கட்டத்திலும் எந்த சட்ட சிக்கலுக்கும் உட்படாமல் நான் இவ்வாய்வில் இருந்து விலகி கொள்ளலாம் என்றும் அறிந்து கொண்டேன். ☐

இந்த ஆய்வு சம்பந்தமாகவோ, இதை சார்ந்த மேலும் ஆய்வு மேற்கொள்ளும் போதும் இந்த ஆய்வில் பங்குபெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்து கொள்கிறேன். நான் ஆய்வில் இருந்து விலகிக் கொண்டாலும் இது பொருந்தும் என அறிகிறேன். ☐

இந்த ஆய்வின் மூலம் கிடைக்கும் தகவல்களையும், பரிசோதனை முடிவுகளையும் மற்றும் சிகிச்சை தொடர்பான தகவல்களையும் மருத்துவர் மேற்கொள்ளும் ஆய்வில் பயன்படுத்திக்கொள்ளவும் அதை பிரசுரிக்கவும் என் முழு மனதுடன் சம்மதிக்கின்றேன். ☐

இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக்கொள்கிறேன். எனக்கு கொடுக்கப்பட்ட அறிவுரைகளின்படி நடந்து கொள்வதுடன் ‘இந்த ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்று உறுதியளிகிறேன். ☐

பங்கேற்பவரின் கையொப்பம் ..... இடம்..... தேதி.....

கட்டைவிரல் ரேகை

பங்கேற்பவரின் பெயர் மற்றும் விலாசம் .....

ஆய்வாளரின் கையொப்பம் ..... இடம்..... தேதி.....

ஆய்வாளரின் பெயர் .....

ஆராய்ச்சி தகவல் தாள்

ஆராய்ச்சி தலைப்பு

தைராய்டு சுரப்பி அறுவை சிகிச்சைக்கு முழு மயக்கம் கொடுத்த பின்பு கழுத்தின் இருபுறமும் மேலோட்டமான மற்றும் உள் நரம்பு பின்னல் பகுதியில் ரோபிவெகெய்ன் (அ) ரோபிவெகெய்ன் மற்றும் குளோனிடின் மருந்து கலவை செலுத்தி மரத்துப்போகும் தன்மை அடிப்படையில் ஒப்பிடுதல்

ஆராய்ச்சியாளர் பெயர் : மருத்துவர்.சு.இரமணிகாந்த்

பங்கேற்பாளர் பெயர் :

ஆராய்ச்சியின் நோக்கம்

தைராய்டு சுரப்பி அறுவை சிகிச்சைக்கு முழு மயக்கம் கொடுத்த பின்பு கழுத்தின் இருபுறமும் மேலோட்டமான மற்றும் உள் நரம்பு பின்னல் பகுதியில் ரோபிவெகெய்ன் (அ) ரோபிவெகெய்ன் மற்றும் குளோனிடின் மருந்து கலவை செலுத்தி மரத்துப்போகும் தன்மை அடிப்படையில் ஒப்பிடுதல்.

1. அறுவை சிகிச்சைக்குப்பின் வலி நிவாரண நேரம்.
2. அறுவை சிகிச்சையின்போதும், அதன் பின்பும், நாடித்துடிப்பு, இரத்த அழுத்தம்.
3. அறுவை சிகிச்சையின்போது இதர வலி நிவாரணிகளின் தேவை
4. பக்க விளைவுகள்
5. அறுவை சிகிச்சைக்கு பின்னான விசுவல் அனலாக் அளவுகோலின் படி வலியின் அளவு.

ஆய்வு முறை

ஆய்வில் பங்குபெறும் நோயாளிகள் மூன்று குழுக்களாகப் பிரிக்கப்படுவர்.

குழு-1 முழு மயக்கத்திற்கு பின் நுண்ணொலி மூலம் மேலோட்டமான மற்றும் உள் கழுத்து நரம்பு பின்னல் பகுதியில் மருந்து போலியாக உப்புநீர் கரைசல்- குழு

குழு-2 முழு மயக்கத்திற்கு பின் நுண்ணொலி மூலம் மேலோட்டமான மற்றும் உள் கழுத்து நரம்பு பின்னல் பகுதியில் ரோபிவெகெய்ன் (0.2%)- குழு

குழு-3 முழு மயக்கத்திற்கு பின் நுண்ணொலி மூலம் மேலோட்டமான மற்றும் உள் கழுத்து நரம்பு பின்னல் பகுதியில் ரோபிவெகெய்ன் (0.2%) மற்றும் குளோனிடின் (2மைக்.கி/கி.கி)- குழு

நன்மைகள்

1) அறுவை சிகிச்சையின்போது நாடித்துடிப்பு மற்றும் இரத்த அழுத்தம் சீராக செயல்பட உதவுகின்றன.

2) இதர வலி நிவாரணிகளின் தேவை வெகுவாக குறைக்கப்படுகின்றன.

3) அறுவை சிகிச்சைக்குப் பின்னர் வலி நிவாரணத்தின் தன்மை நீட்டிக்கப்படுகின்றது.

பக்கவிளைவுகள்

ஊசி போடும்போது அசௌகரியம் ஏற்படலாம். மரத்துப்போகும் ஊசியின் மூலம் இது தவிர்க்கப்படும். குறைந்த இரத்த அழுத்தம், குறைந்த நாடித்துடிப்பு ஏற்படலாம். அதற்கு மாற்று மருந்துகள் உடனடியாக கொடுக்கப்படும்.

இந்த முறையான ஆய்வு ஏற்கனவே பல இடங்களில் நடத்தப்பட்டுள்ளது. மேலும் இதன் பாதுகாப்பு உறுதிசெய்யப்பட்டுள்ளது. நீங்கள் இந்த ஆய்வில் பங்குகொள்ள விரும்பவில்லை என்றால் எப்போதும் உபயோகிக்கப்படும் மருந்தே கொடுக்கப்படும். உங்கள் பாதுகாப்பே எங்களின் முக்கிய நோக்கம்.

இந்த ஆய்வு சம்பந்தமான எல்லா புள்ளி விவரங்கள் மற்றும் நோயாளிகளின் விவரங்கள் ரகசியமாக வைக்கப்படும். இந்த ஆய்வு சம்பந்தப்பட்ட எல்லா பரிசோதனைகள், மருந்துகள் மற்றும் மருத்துவ சேவைகள் அனைத்தும் நோயாளிகளுக்கு இலவசமாக வழங்கப்படும்.

ஆய்வாளரின் பெயர் **பங்குபெறுபவரின் பெயர்**

ஆய்வாளரின் கையொப்பம் **பங்குபெறுபவரின் கையொப்பம்**

S.No	Name	Age	Sex	IP No	Ht	Wt	Group	Diag-nosis	Name of Surgery	Haemodynamics- Intraoperative														Heart Rate																		
										Baseline				Induction				Incision				End of the Procedure				Extubation																		
										SBP	DBP	MAP	HR	SBP	DBP	MAP	HR	SBP	DBP	MAP	HR	SBP	DBP	MAP	HR	SBP	DBP	MAP	HR	0	5	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180
1	karpagam	55	f	133764	150	53	A	MNG	TT	140	84	102.6666667	86	114	80	91.33333333	96	110	76	87.33333333	91	137	88	104.3333333	97	162	92	115.3333333	109	95	98	85	84	82	83	87	88	90	91	92	89	93	96			
2	kala	35	f	11956	148	54	A	MNG	TT	138	90	106	100	134	89	104	105	132	83	99.33333333	111	140	80	100	111	148	86	106.6666667	105	100	101	103	105	104	108	105	110	111	112	110	107	104	106			
3	Yasodha	44	f	14579	152	49	A	SNT	TT	145	91	109	105	147	91	109.6666667	106	149	97	114.3333333	108	118	76	90	100	147	89	108.3333333	121	106	105	96	93	100	101	92	98	95	92	106	110	100	110	121		
4	Shanthi	46	f	14717	155	55	A	R SNT	TT	126	86	99.33333333	87	116	88	97.33333333	96	117	88	97.66666667	91	120	82	94.66666667	87	137	92	107	86	88	90	87	89	73	91	84	93	74	73	87	83					
5	valli	35	f	134066	153	57	A	MNG	TT	122	97	105.3333333	107	123	70	87.66666667	90	136	110	118.6666667	96	146	100	115.3333333	101	150	103	118.6666667	118	102	97	93	80	79	76	73	76	73	80	81	101	106	117			
6	sumathi	27	f	13236	149	56	A	MNG	TT	140	98	112	85	145	90	108.3333333	88	120	80	93.33333333	84	137	96	109.6666667	90	140	96	110.6666667	97	87	77	69	76	71	82	73	93	71	75	94						
7	sivabakkiyam	42	f	13258	150	59	A	R SNT	TT	150	90	110	110	140	86	104	112	110	72	84.66666667	130	130	84	99.33333333	88	140	86	104	90	140	130	125	116	110	100	91	78	82	86							
8	maheswari	37	f	21599	156	60	A	MNG	TT	144	85	104.6666667	90	138	90	106	101	116	90	98.66666667	100	130	90	103.3333333	89	132	92	105.3333333	109	70	74	72	70	71	80	68	66	76	83	92	104	70	82			
9	jothi	45	f	21471	152	58	A	MNG	TT	164	91	115.3333333	86	156	92	113.3333333	92	148	93	111.3333333	88	153	98	116.3333333	70	163	96	118.3333333	99	89	79	71	70	74	71	61	62	58	52	60	64	65	75	60	97	
10	sujatha	42	f	21602	153	57	A	MNG	TT	131	86	101	85	150	100	116.6666667	92	139	100	113	90	143	99	113.6666667	72	146	95	112	98	89	92	85	88	90	87	83	64	71	82							
11	valarmathi	26	f	21611	150	58	A	MNG	TT	105	70	81.66666667	83	106	69	81.33333333	96	108	71	83.33333333	92	128	86	100	90	132	85	100.6666667	95	91	90	96	95	101	92	93	90	102	104	89	93	90			
12	rajendran	38	m	31830	163	63	A	MNG	TT	146	105	118.6666667	103	108	74	85.33333333	101	128	95	106	106	137	95	109	76	144	98	113.3333333	113	96	97	93	91	99	89	82	90	91	89	96	110					
13	Rajalakshmi	42	f	27204	156	56	A	MNG	TT	150	93	112	110	140	90	106.6666667	92	122	82	95.33333333	100	142	82	102	94	138	88	104.6666667	102	99	111	100	114	118	117	123	130	132	122	104	102	105				
14	sakunthala	39	f	2424	152	55	A	MNG	TT	141	80	100.3333333	100	134	90	104.6666667	116	110	78	88.66666667	108	117	98	104.3333333	96	125	104	111	108	109	105	96	86	85	70	73	81	93	100							
15	mahalakshmi	31	f	38945	145	49	A	MNG	TT	130	86	100.6666667	101	178	116	136.6666667	98	120	88	98.66666667	101	120	74	89.33333333	89	147	94	111.6666667	98	92	104	100	99	93	94	91	86	89	60	65	61	93				
16	shoba	46	f	45412	148	52	A	MNG	TT	130	90	103.3333333	85	124	86	98.66666667	94	107	87	93.66666667	96	142	97	112	90	148	100	116	88	87	78	71	64	71	68	66	61	60	63	61	71	68	63	69	60	61
17	Safiabegm	53	f	134067	152	57	A	SNT	TT	124	86	98.66666667	87	120	80	93.33333333	86	110	70	83.33333333	74	138	82	100.6666667	87	158	98	118	108	76	72	77	68	62	89	87	79	77	74	70	71	70	83	107		
18	Thangaraj	48	m	25889	150	56	A	MNG	TT	145	92	109.6666667	100	146	97	113.3333333	128	137	97	110.3333333	115	148	92	110.6666667	120	147	94	111.6666667	120	116	110	100	94	98	88	84	80	79	82	81	78	83	111	125		
19	ramapraba	40	f	24427	147	55	A	MNG	TT	138	90	106	97	131	90	103.6666667	95	148	98	114.6666667	98	138	94	108.6666667	99	163	96	118.3333333	116	91	93	94	90	88	86	90	91	91	88	86	90	91	100	116		
20	maheswari	40	f	216056	148	53	A	MNG	TT	141	80	100.3333333	95	143	80	101	90	148	85	106	89	152	80	104	99	153	91	111.6666667	108	95	97	92	90	88	89	92	94	97	99	88	100	104	96	98	96	100
21	saithani	26	f	10534	155	52	B	R SNT	TT	140	90	106.6666667	107	128	87	100.6666667	103	110	76	87.33333333	90	121	72	88.33333333	78	122	80	94	86	110	100	90	88	90	88	80	80	78	83	82	82	80	78	78		
22	kuppu	27	f	12349	148	54	B	R SNT	TT	128	84	98.66666667	67	135	91	105.6666667	108	103	59	73.66666667	110	127	85	99	90	147	89	108.3333333	94	110	90	94	84	80	110	102	90	98	90	90					
23	epsi	21	f	10871	150	56	B	D G	TT	129	88	101.6666667	90	120	72	88	101	130	90	103.3333333	102	112	63	79.33333333	81	121	72	88.33333333	85	90	96	102	88	70	81	84	89	82	71	90	72	80	76	81	90	
24	Radha	31	f	13254	155	60	B	SNT	TT	150	90	110	100	130	92	104.6666667	106	126	88	100.6666667	82	122	75	90.66666667	70	130	86	100.6666667	100	76	78	84	82	81	80	84	73	65	64	64	64	70	64	75		
25	manoharan	54	m	28144	165	63	B	MNG	TT	138	86	103.3333333	78	120	74	89.33333333	72	109	75	86.33333333	60	124	88	100	72	122	84	96.66666667	72	68	60	60	62	64	60	58	75	66	60	60	64	61	64	66		
26	rajeswari	40	f	56874	153	58	B	MNG	TT	150	96	114	86	147	94	111.6666667	96	130	82	98	82	113	77	89	76	130	90	103.3333333	88	80	82	84	88	82	84	70	80	80	73	76						
27	lakshmi	41	f	27119	149	50	B	R SNT	TT	120	76	90.66666667	84	116	71	86	96	120	68	85.33333333	90	114	81	92	75	120	80	93.33333333	82	90	96	93	92	90	84	86	88	82	81	78	74	72	76	78		
28	renuka	37	f	29950	153	50	B	R SNT	TT	130	80	96.66666667	80	128	78	94.66666667	74	132	84	100	80	122	78	92.66666667	72	130	74	92.66666667	80	78	84	82	80	75	78	86	82	69	70	72						
29	gomathi	30	f	22964	148	45	B	MNG	TT	144	72	96	116	126	76	92.66666667	110	106	68	80.66666667	94	108	66	80	78	116	66	82.66666667	86	96	80	74	85	84	82	86	86	82	86	88	86	83	82	80		
30	chellammal	36	f	24375	145	49	B	MNG	TT	135	78	97	100	124	76	92	86	124	74	90.66666667	84	118	74	88.66666667	78	130	80	96.66666667	90	84	82	86	85	87	89	90	84	88	87	85	80	76	78	90		
31	pushpadarani	54	f	132561	146	54	B	MNG	TT	138	90	106	84	108	78	88	77	116	76	89.33333333	74	104	74	84	94	110	66	80.66666667	80	74	76	78	77	74	74	68	73	76	80	72	74	68	80			
32	geetha	37	f	975	153	60	B	L SNT	TT	160	88	112	100	130	86	100.6666667	98	124	78	93.33333333	88	114	86	95.33333333	76	126	84	98	72	86	83	82	80	78	74	86	90	88	90	88	86	83	80	78	89	
33	jeeva	55	f	6009	155	53	B	MNG	TT	134	92	106	100	126	80	95.33333333	86	116	80	92	70	124	86	98.66666667	74	132	80	97.33333333	84	74	72	69	64	74	72	76	72	70	71	75	72	74	78	80		
34	lakshmi	49	f	43449	150	58	B	MNG	TT	126	82	96.66666667	84	100	72	81.33333333	86	110	80	90	78	124	86	98.66666667	64	118	79	92	88	81	83	80	79	76	74	68	66	72	66	64	76	86					
35	saina	25	f	45375	148	55	B	MNG	TT	130	90	103.3333333	100	126	84	98	92	100	70	80	79	110	79	89.33333333	69	107	84	91.66666667	72	102	98	78	77	76	78	82	79	84	69	68	74	76	75			
36	navaneetham	34	f	48024	146	53	B	MNG	TT	114	68	83.33333333	74	106	62	76.66666667	61	110	66	80.66666667	64	104	68	80	60	114	66	82	86	65	60	54	62	60	62	63	64	66	64	60	59	64	62	67	62	
37	malliga	50	f	26331	149	52	B	MNG	TT	150	90	110	106	120	80	93.33333333	100	126	81	96	86	130	86	100.6666667	90	140	90	106.6666667	104	86	85	84	88	80	92	78	84	82	78	75	85	90	92	86		
38	kasthuri	41	f	27119	150	50	B	MNG	TT	148	96	113.3333333	114	136	88	104	96	124	90	101.3333333	90	104	70	81.33333333	84	130	80	96.66666667	86	88	84	86	82	78	74	68	66	72	70	82	84	88				
39	usha	38	f	5968	153	54	B	MNG	TT	124	68	86.66666667	108	106	66	79.33333333	94	110	64	79.33333333	84	108	68	81.33333333	84	128	74	92	90	82	90	94	84	83	80	82	87	85	89	84	90	88				
40	amutha	38	f	46633	151	56	B	MNG	TT	152	88	109.3333333	100	126	80	95.33333333	94	124	83	96.66666667	84	116	84	94.66666667	74	136	96	109.3333333	84	84	80	77	76	74	72	79	70	76	77	76	85	83				
41	govindhi	44	f	8941	152	52	C	SNT	TT	120	82	94.66666667	82	130	78	95.33333333	86	110	67	81.33333333	88	126	84	98	72	130	80	96.66666667	90	92	100	88	82	80	82	70	72	66	70	64	72	90				
42	mariammal	35	f	21663	146	47	C	MNG	TT	130	90	103.3333333	96	132	88	102.6666667	90	120	80	93.33333333	90	118	81	93.33333333	81	122	72	88.66666667	100	90	92	93	97	93	94	89	85	75	85	85	80	81	100			
43	saraswathi	43	f	28948	150	50	C	MNG	TT	132	88	102.6666667	86	128	82	97.33333333	82	110	61	77.33333333	86	134	87	102.6666667	70	134	85	101.3333333	88	84	86	79	79	81	75	79	77	74	88						

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Systolic Blood Pressure																	Diastolic Blood Pressure															Mean Arterial Pressure															
0	5	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180	0	5	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180	0	5	10	15	20	25	30	45	60	75	90	105	120	135	150	165	180
130	142	143	141	138	128	111	113	115	128	132	133	143	145				97	98	97	96	91	70	76	77	75	76	79	79	82	83				108	112.666667	112.333333	111	106.666667	89.3333333	87.6666667	89	88.3333333	93.3333333	96.6666667	97	102.333333	103.666667	0	0	0
133	133	134	139	139	142	143	134	138	140	142	145	140	149				85	90	90	91	89	88	81	76	75	74	80	81	83	84				101	104.333333	104.666667	107	105.666667	106	101.666667	95.3333333	96	96	100.666667	102.333333	102	105.666667	0	0	0
138	131	121	122	124	120	121	123	140	128	109	111	106	120	147			90	91	90	84	85	83	81	81	84	88	84	89	90	72	90			106	104.333333	100.333333	96.6666667	98	95.3333333	94.3333333	95	102.666667	101.333333	92.3333333	96.3333333	95.3333333	88	109	0	0
112	118	110	117	107	112	107	122	108	113	114	137						79	89	76	87	70	74	79	90	80	80	81	91						90	98.6666667	87.3333333	97	82.3333333	86.6666667	88.3333333	100.666667	89.3333333	91	92	106.333333	0	0	0	0	0
135	150	142	144	132	121	146	129	128	141	147	146	145	152				110	106	105	110	104	98	99	100	96	92	100	102	104	100				118.333333	120.666667	117.333333	121.333333	113.333333	105.666667	114.666667	109.666667	106.666667	108.333333	115.666667	116.666667	117.666667	117.333333	0	0	0
149	148	127	136	122	126	121	127	127	118	143							96	94	92	93	83	89	84	86	90	78	98							113.666667	112	103.666667	107.333333	96	101.333333	96.3333333	99.6666667	102.333333	91.3333333	113	0	0	0	0	0	0
100	112	105	104	112	116	111	120	116	124								68	61	60	61	60	70	72	80	78	82								78.6666667	78	75	75.3333333	77.3333333	85.3333333	85	93.3333333	90.6666667	96	0	0	0	0	0	0	0
109	136	111	118	121	122	121	124	128	138	127	129	133	131				78	100	74	83	84	85	82	80	79	78	75	82	81	89				88.3333333	112	86.3333333	94.6666667	96.3333333	97.3333333	95	94.6666667	95.3333333	98	92.3333333	97.6666667	98.3333333	103	0	0	0
147	108	111	117	120	130	124	134	108	142	150	160	153	152	151	163		93	83	81	84	86	86	82	85	87	74	75	79	97	95	96	98		111	91.3333333	91	95	97.3333333	100.666667	96	101.333333	94	96.6666667	100	106	115.666667	114	114.333333	119.666667	0
137	136	143	149	136	136	118	130	144	145								102	108	110	106	95	93	77	91	92	94								113.666667	117.333333	121	120.333333	108.666667	107.3333333	90.6666667	104	109.333333	111	0	0	0	0	0	0	0
101	119	110	113	1000	103	98	99	104	116	109	118	134					70	70	72	71	76	74	65	69	70	80	67	76	86					80.3333333	86.3333333	84.6666667	85	384	83.6666667	76	79	81.3333333	92	81	90	102	0	0	0	0
131	135	132	136	137	138	135	134	127	142	130	143						97	98	96	94	92	90	86	91	90	88	94	96						108.333333	110.333333	108	108	107	106	102.333333	105.333333	102.333333	106	106	111.666667	0	0	0	0	0
121	133	135	142	151	150	139	138	123	118	122	140	135					83	99	97	94	78	75	73	71	80	85	84	80	82					95.6666667	110.333333	109.666667	110	102.333333	100	95	93.3333333	94.3333333	96	96.6666667	100	99.6666667	0	0	0	0
109	110	112	99	100	102	121	123	124	126								68	66	73	67	68	69	80	84	79	90								81.6666667	80.6666667	86	77.6666667	78.6666667	80	93.6666667	97	94	102	0	0	0	0	0	0	0
121	116	115	114	111	138	127	107	121	134	131	116	146					81	70	68	67	72	80	80	74	81	69	67	73	91					94.3333333	85.3333333	83.6666667	82.6666667	85	99.3333333	95.6666667	85	94.3333333	90.6666667	88.3333333	87.3333333	109.333333	0	0	0	0
106	109	124	122	121	124	130	125	127	123	123	124	128	122	134	136	131	76	78	92	87	88	84	90	88	90	88	87	93	92	94	87	88	99	86	88.3333333	102.666667	98.6666667	99	97.3333333	103.333333	100.333333	102.333333	99.6666667	99	103.333333	104	103.333333	102.666667	104	109.666667
103	104	101	110	105	127	108	110	108	105	106	108	137	153	139			70	71	76	72	75	76	74	73	72	77	80	76	78	88	90			81	82	84.3333333	84.6666667	85	93	85.3333333	85.3333333	84	86.3333333	88.6666667	86.6666667	97.6666667	109.666667	106.333333	0	0
136	140	140	146	143	135	134	124	120	124	133	146	148	138	152			97	96	100	101	97	96	94	92	90	96	89	90	91	94	96			110	110.666667	113.333333	116	112.333333	109	107.333333	102.666667	100	105.333333	103.666667	108.666667	110	108.666667	114.666667	0	0
151	150	147	146	143	140	142	138	136	142	134	131	137	138	163			95	93	88	95	94	93	96	92	93	96	94	95	90	92	95			113.666667	112	107.666667	112	110.333333	108.666667	111.333333	107.333333	107.333333	111.333333	107.333333	107	105.666667	107.333333	117.666667	0	0
143	146	140	142	136	139	147	141	138	137	142	136	140	129	130	134	148	82	85	86	84	80	86	87	78	77	76	80	84	91	92	84	90	92	102.333333	105.333333	104	103.333333	98.6666667	103.666667	107	99	97.3333333	96.3333333	100.666667	101.333333	107.333333	104.333333	99.3333333	104.666667	110.666667
140	130	110	121	101	96	110	126	114	112	122	105	114	115	121			88	80	76	74	60	60	70	91	76	75	80	62	72	65	72			105.333333	96.6666667	87.3333333	89.6666667	73.6666667	72	83.3333333	102.666667	88.6666667	87.3333333	94	76.3333333	86	81.6666667	88.3333333	0	0
103	113	121	121	121	112	93	107	128	127	127							59	79	77	78	77	69	65	78	85	85	80							73.6666667	90.3333333	91.6666667	92.3333333	91.6666667	83.3333333	74.3333333	87.6666667	99.3333333	99	95.6666667	0	0	0	0	0	0
128	124	130	126	128	130	116	128	120	115	109	116	121	122	112	128		86	82	90	80	81	80	77	72	60	57	60	81	73	75	63	80		100	96	103.333333	95.3333333	96.6666667	96.6666667	90	90.6666667	80	76.3333333	76.3333333	92.6666667	89	90.6666667	79.3333333	96	0
130	126	122	126	118	122	128	133	127	121	114	122	122	120	122			80	76	82	88	80	78	84	81	86	88	75	77	75	69	79			96.6666667	92.6666667	95.3333333	100.666667	92.6666667	92.6666667	98.6666667	98.3333333	99.6666667	99	88	92	90.6666667	86	93.3333333	0	0
114	109	109	139	119	125	111	115	128	124	122	130	133	132	124			72	75	78	88	76	90	73	68	87	82	86	90	85	88	90			86	86.3333333	88.3333333	105	90.3333333	101.666667	85.6666667	83.6666667	100.666667	96	98	103.333333	101	102.666667	101.333333	0	0
124	130	120	118	126	122	110	111	129	130	113							78	82	76	75	82	84	70	72	85	85	77							93.3333333	98	90.6666667	89.3333333	96.6666667	96.6666667	83.3333333	85	99.6666667	100	89	0	0	0	0	0	0
120	110	112	116	115	113	111	120	114	122	120	117	118	119	121			76	71	73	77	72	67	66	68	81	81	80	81	82	81	83			90.6666667	84	86	90	86.3333333	82.3333333	81	85.3333333	92	94.6666667	93.3333333	93	94	93.6666667	95.6666667	0	0
118	114	128	132	137	130	124	122	129	126	122							68	68	82	84	88	80	74	82	87	78	78							84.6666667	83.3333333	97.3333333	100	104.3333333	96.6666667	90.6666667	95.3333333	101	94	92.6666667	0	0	0	0	0	0
114	106	108	106	104	108	110	108	110	102	104	110	104	106	110			70	71	69	70	64	63	70	60	74	68	67	70	61	63	67			84.6666667	82.6666667	82	82	77.3333333	78	83.3333333	76	86	79.3333333	79.3333333	83.3333333	75.3333333	77.3333333	81.3333333	0	0
124	118	116	110	116	117	112	126	122	120	116	119	130	124	128			74	70	70	68	72	73	74	70	76	72	71	70	70	78	76			90.6666667	86	85.3333333	82	86.6666667	87.6666667	86.6666667	88.6666667	91.3333333	88	86	86.3333333	90	93.3333333	93.3333333	0	0
116	118	124	123	106	106	118	114	116	120	118	122	130	128				90	92	92	90	86	84	82	86	88	88	86	84	96	94				98.6666667	100.666667	102.666667	101	92.6666667	91.3333333	94	95.3333333	97.3333333	98.6666667	96.6666667	96.6666667	107.333333	105.333333	0	0	0
126	122	120	116	114	118	122	124	126	124	118	124	122	127	128	130		80	82	84	88	86	80	78	76	78	80	82	76	78	80	82	80		95.3333333	95.3333333	96	97.3333333	95.3333333	92.6666667	92.6666667	92	94	94.6666667	94	92	92.6666667	95.6666667	97.3333333	96.6666667	0
114	116	114	118	112	124	124	130	132	130	132	134	124	132	124			82	84	86	80	78	78	75	74	76	77	80	82	78	80	82			92.6666667	94.6666667	95.3333333	92.6666667	89.3333333	93.3333333	91.3333333	92.6666667	94.6666667	94.6666667	97.3333333	99.3333333	93.3333333	97.3333333	96	0	0
112	114	116	112	115	114	114	116	118	122	124	118	126					80	78	78	75	74	78	78	81	82	80	78	78	80					90.6666667	90	90.6666667	87.3333333	87.6666667	90	90	92.6666667	94	94	93.3333333	91.3333333	95.3333333	0	0	0	0
134	122	97	96	98	117	114	110	108	107	110	109	114	118				90	88	86	88	87	88	82	80	82	80	79	74	72	76				104.666667	99.3333333	89.6666667	90.6666667	90.6666667	97.6666667	92.6666667	90	90.6666667	89	89.3333333	85.6666667	86	90	0	0
109	110	112	114	100	108	104	100	114	120	116	105	102	111	114	118		73	76	74	70	68	66	68	62	60	64	68	69	70	68	66	70		85	87.3333333	86.6666667	84.6666667	78.6666667	80	80	74.6666667	78	82.6666667	84	81	80.6666667	82.3333333	82	86	0
127	122	125	124	128	118	117	114	126	130	128	124	120	132	130			88	86	84	80	78	78	74	73	76	75	70	72	70	72	74			101	98	97.6666667	94.6666667	94.6666667	91.3333333	88.3333333	86.6666667	92.6666667	93.3333333	89.3333333	89.3333333	86.6666667	92	92.6666667	0	0
124	118	116	119	120	126	122	130	124	117	116	122	124					94	90	92	90	86	82	82	80	78	74	79	84	84					104	99.3333333	100	99.6666667	97.3333333	96.6666667	95.3333333	96.6666667	93.3333333	88.3333333	91.3333333	96.6666667	97.3333333	0	0	0	0
101	100	110	116	100	102	106	110	112	114	120	124	126					78	75	74	70	66	65	64	66	68	66	62	72	86					85.6666667	83.3333333	86	85.3333333	77.3333333	77.3333333	78	80.6666667	82.6666667	82	81.3333333	89.3333333	99.3333333	0	0	0	0
121	120	124	126	118	116	118	124	123	120	126	112	124					88	86	84	80	80	76	72	76	77	74	72	80	80					99	97.3333333	97.3333333	95.3333333	92.6666667	89.3333333	87.3333333	92	92.3333333	89.3333333	90	90.6666667	94.6666667	0	0	0	0
132	130	110	120	126	122	115	105	109	131	112	126	130					86	80	67	82	86	88	70	73	63	52	68	84	80					101.333333	96.6666667	81.3333333	94.6666667	99.3333333	99.3333333	85	83.6666667	78.3333333	78.3333333	82.6666667	98	96.6666667	0	0	0	0
120	122	131	106	118	109	105	103	104	125	123	117	118	122				80	82	95	74	75	75	78	71	78	83	70	76	81	72				93.3333333	95.3333333	107	84.6666667	89.3333333	86.3333333	87	81.6666667	86.6666667	97	87.6666667	89.6666667	93.3333333	88.6666667	0	0	0
134	110	114	129	113	110	117	121	109	134								84	61	72	84	68	64	62	81	68	85								100.666667	77.3333333	86	99	83	79.3333333	80.3333333	94.3333333	81.6666667	101.333333	0	0	0	0	0	0	0

| | | |

| Total Fentanyl in Mcg | VAS | | | | | | | | | | | | | | | | | | | | | Duration of Analgesia (Mts) | Heart Rate | | | | | | | | | | | | | | | | | | |

| | | |

| Postoperative | | |

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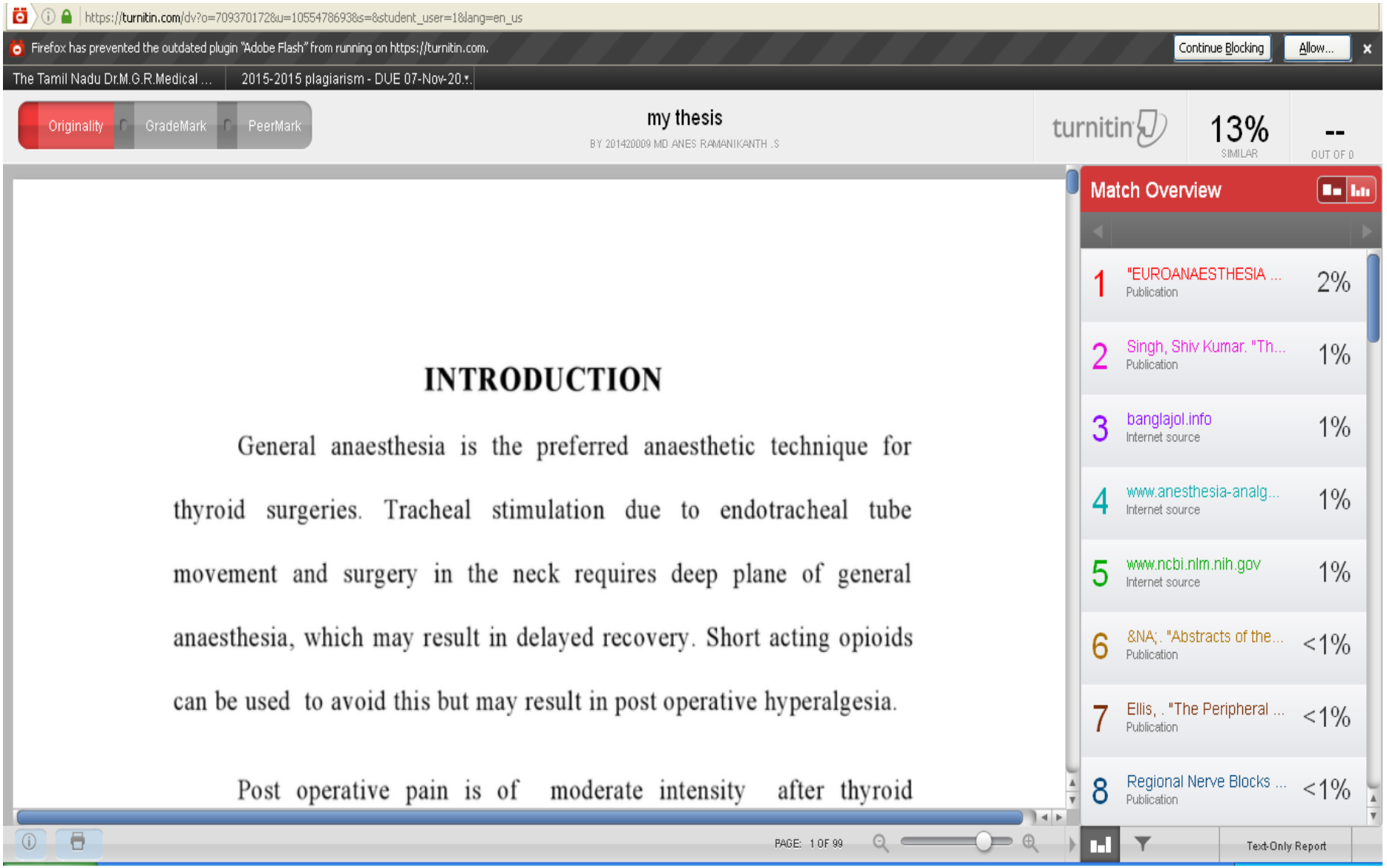
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INTRODUCTION
General anaesthesia is the preferred anaesthetic technique for thyroid surgeries. Tracheal stimulation due to endotracheal tube movement and surgery in the neck requires deep plane of general anaesthesia, which may result in delayed recovery. Short acting opioids can be used to avoid this but may result in post operative hyperalgesia.
Post operative pain is of moderate intensity after thyroid
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CERTIFICATE OF APPROVAL

To
Dr.Ramanikanth.S.
II Year PG in M.D.(Anaesthesiology)
Madras Medical College/RGGGH
Chennai 600 003

Dear Dr.Ramanikanth.S. ,

The Institutional Ethics Committee has considered your request and approved your study titled " **BILATERAL SUPERFICIAL AND DEEP CERVICAL PLEXUS BLOCK USING ROPIVACAINE & CLONIDINE FOR THYROID SURGERIES UNDER GENERAL ANAESTHSIA " - NO.08012016.**

The following members of Ethics Committee were present in the meeting hold on **12.01.2016** conducted at Madras Medical College, Chennai 3

1.Dr.C.Rajendran, MD.,	:Chairperson
2.Dr.R.Vimala,MD.,Dean,MMC,Ch-3	:Deputy Chairperson
3.Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3	: Member Secretary
4.Prof.B.Vasanthi,MD.,Inst.of Pharmacology,MMC,Ch-3	: Member
5.Prof.P.Raghumani,MS, Dept.of Surgery,RGGGH,Ch-3	: Member
6.Prof.M.Saraswathi,MD.,Director, Inst.of Path,MMC,Ch-3	: Member
7.Tmt.J.Rajalakshmi, JAO,MMC, Ch-3	: Lay Person
8.Thiru S.Govindasamy, BA.,BL,High Court,Chennai	: Lawyer
9.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

MADRAS MEDICAL COLLEGE
21 JAN 2016
CHENNAI-600 003

Member Secretary – Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
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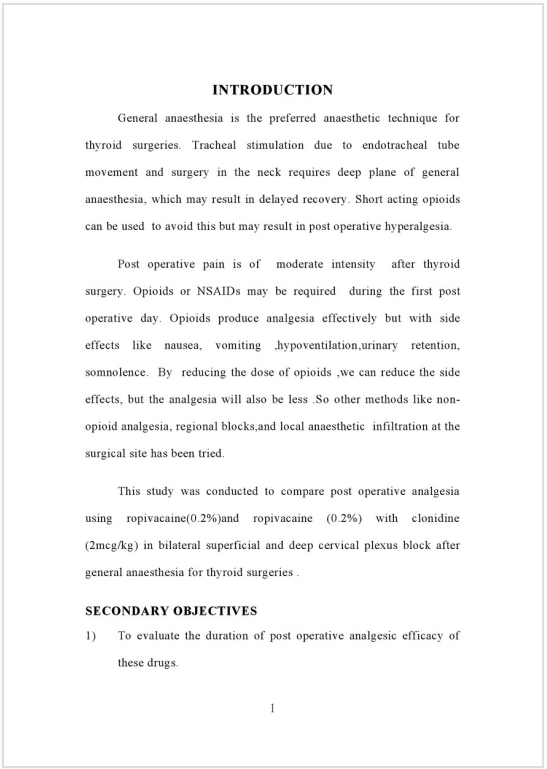

INTRODUCTION

General anaesthesia is the preferred anaesthetic technique for thyroid surgeries. Tracheal stimulation due to endotracheal tube movement and surgery in the neck requires deep plane of general anaesthesia, which may result in delayed recovery. Short acting opioids can be used to avoid this but may result in post operative hyperalgesia.

Post operative pain is of moderate intensity after thyroid surgery. Opioids or NSAIDs may be required during the first post operative day. Opioids produce analgesia effectively but with side effects like nausea, vomiting ,hypoventilation,urinary retention, somnolence. By reducing the dose of opioids ,we can reduce the side effects, but the analgesia will also be less .So other methods like non-opioid analgesia, regional blocks,and local anaesthetic infiltration at the surgical site has been tried.

This study was conducted to compare post operative analgesia using ropivacaine(0.2%)and ropivacaine (0.2%) with clonidine (2mcg/kg) in bilateral superficial and deep cervical plexus block after general anaesthesia for thyroid surgeries .

SECONDARY OBJECTIVES

1) To evaluate the duration of post operative analgesic efficacy of these drugs.

1